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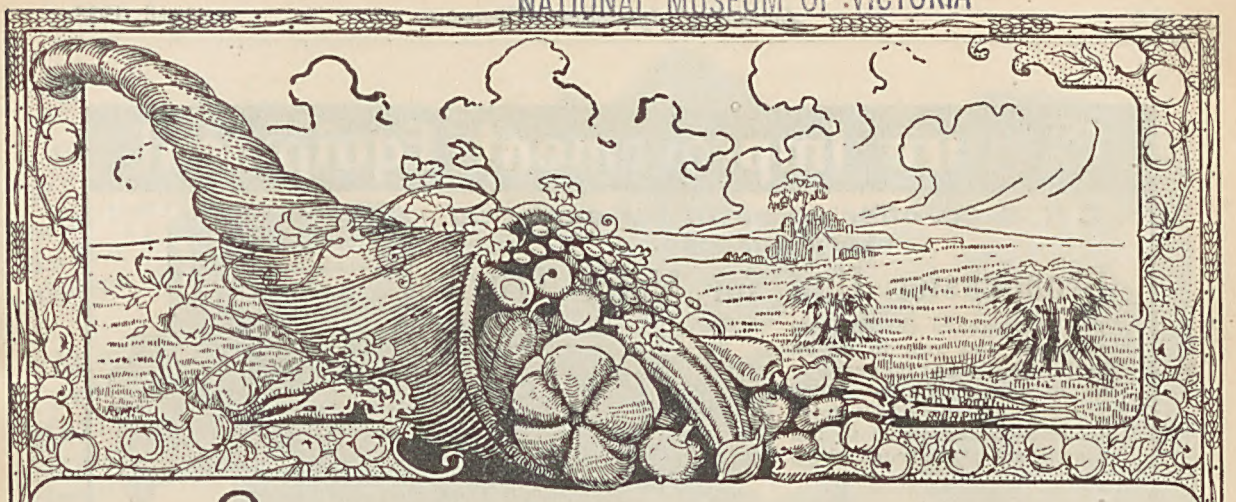

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Issued by direction of the Hon. E. J. Hogan, M.L.A., Minister of Agriculture.

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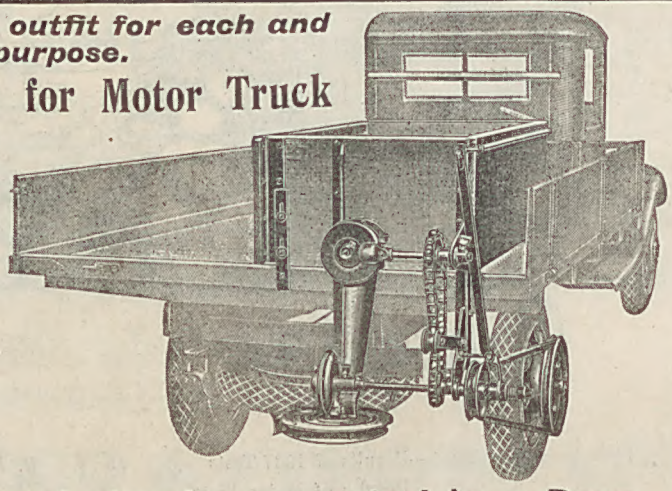

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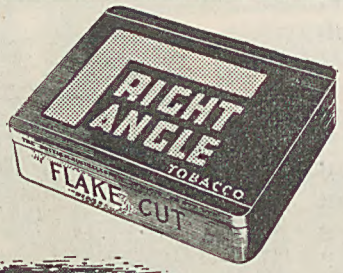

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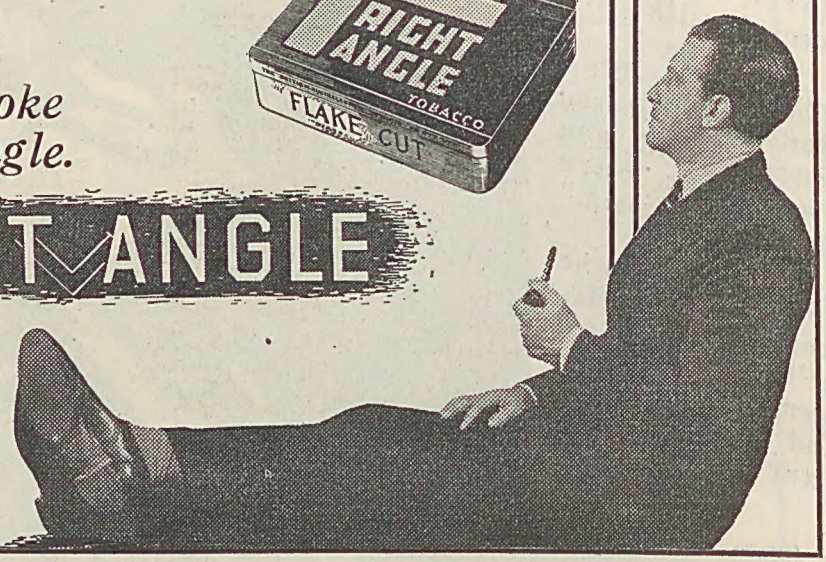

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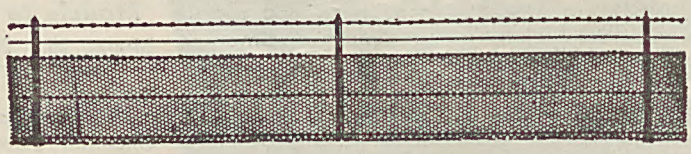

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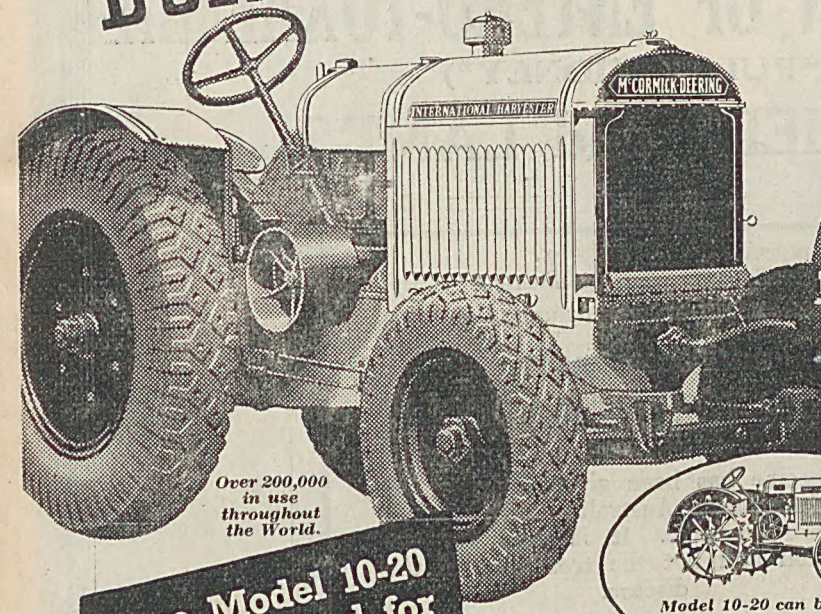

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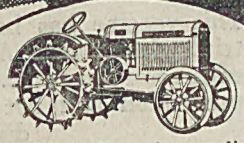

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Results of 1937 Tests

Sixth Annual Report of the Experimental Pasture Work conducted by the Department of Agriculture under arrangement with the Victorian Pasture Improvement League.

By R. L. Twentyman, B.Agr.Sc., Agrostologist

THE experimental pasture work conducted by the Department of Agriculture for the Victorian Pasture Improvement League was commenced in 1932. This report is mainly confined to the results of the experiments measured or observed during 1937. A full record of the work in the earlier years is to be found in the annual reports issued and published early in the years 1933 to 1937.

The bulk of the experimental work as initiated in 1932, consisting of manurial and sown species trials, has been continued on the original sites. Extensions to the original plan of work, however, have been undertaken in the lighter pastoral areas of the Western District where trials with subterranean clover on native pasture land, and with introduced grass species on established subterranean clover pastures, were commenced in 1935.

Following on encouraging results which had been obtained on some of the major plots in Gippsland and the Western District, additional trials, consisting of mowing manurial plots, have been established in the vicinity of the responsive areas to determine the general applicability of these results to the districts as a whole. In the more recently established trials the lay-out of the plots has been varied according to the nature of the problem to be investigated, and with the benefit of experience gained in handling the older plots.

Wherever possible measured records have been made of the pasture growth resulting from the various treatments. With manurial trials, these measurements have usually been made by mowing the treated pasture strips and weighing the resultant produce. When the major plots were first established, larger areas were set aside for fertilizer trials, using grazing animals to measure differences in production. Though this method failed to indicate yield differences which were apparent to the eye, these areas have served as a useful check on the botanical composition of the swards on the manurial-mowing trials.

Observational records only, have been made on the species trials and the pilot plots.

General Results, 1932 to 1937.

At the time this work was commenced, keen interest was being taken in results which were reported from New Zealand as being achieved under modified methods of pasture management and, in designing the experimental work of the Victorian Pasture Improvement League, particular attention was given to ascertaining if these New Zealand methods would prove useful under Victorian conditions. These methods or practices aimed at increasing the stock-carrying capacity of pastures through increased fertilizer treatment, intensive rotational grazing methods, the sowing of leafier and more prolific pasture species, grass topping, frequent harrowing to promote "soil aeration" and to spread animal droppings, and the use of nitrogenous fertilizer to stimulate out-of-season growth.

The results since obtained from the Pasture Improvement League trials have shown the limited value of these New Zealand methods to improve pasture growth under Victorian conditions. The general principles underlying the improvement of New Zealand pastures may hold under Victorian conditions, but the large difference in climatic conditions limits their practical application in this State.

Pasture growth in southern Victoria under non-irrigated conditions is largely seasonal, being usually completely checked by the dry summer and autumn period, the effect of which no fertilizer or pasture-management treatment can overcome. Pasture improvement in this area must be confined to increasing growth during the period when soil moisture conditions will permit, or to the growing of a pasture which will be of a higher feeding value when used as dry feed.

The seasonal pasture growth curves obtained from a number of different pastures in various districts of southern Victoria, reveal a marked similarity in their periods of seasonal growth. All plots show a period of vigorous growth during the spring but with the advent of hot dry conditions in the early summer, growth is almost completely checked and is not resumed until the autumn rains and lower temperatures combine to provide more favorable growing conditions. Depending on the rains, good or poor autumn growth may be obtained, but with the advent of winter this growth will be checked by cold wet conditions. The resumption of growth in the spring then depends on the occurrence of warmer conditions and the spring growth usually commences late in August.

So far the bulk of pasture improvement that has been effected on farms in southern Victoria has been achieved by increasing the rate of growth within this normal growing period. Pasture improvement has provided better dry feed during the summer and autumn periods but it has not materially prolonged the growth into the summer. In dry autumns the growth on improved pastures, where these are composed of annual species, is liable to be even poorer than on the native pastures. When good autumn rains come, such improved pastures usually make rapid growth, but during the past two autumns there have been instances, in the Western District, where they did not make any growth before the winter and then attack by pea mite and cockchafer grub rendered them completely bare.

Though the greatest increase in growth on improved pastures is usually shown in the early spring period, probably the most valuable result of pasture improvement is in the increased winter growth. Winter growth on improved pastures, is vastly superior to the growth on unimproved natural pastures although, at this time, all growth is slow owing to low temperatures.

Included in these experiments have been a number of forms and combinations of artificial fertilizers together with various pasture species capable of making "out-of-season" growth, but none of these have shown any ability to encourage or make any appreciable growth outside the normal pasture-growing season of the district. Dressings of nitrogenous fertilizers have been found to promote extra grass growth within the growing period, but the response has been limited mainly to the early spring. Most of the fertilizers giving a response, have exerted their greatest influence on growth at this period and an examination of the yields from individual cuttings indicates that the greatest manurial response is restricted to the early spring. Later in the season, on the mowing areas, there has seldom

been any marked difference between manured and unmanured plots and there has sometimes actually been a reduced yield over this period on heavily manured plots, this apparently occurring as a normal reaction following on the unusually vigorous early spring growth. This vigorous early spring growth usually results in these plots receiving a severe check when they are cut off, as the basal growth is stemmy and, lacking leaves, it makes a slow recovery during the first ten days after mowing with the motor mower.

The value of harrowing to distribute animal droppings and to maintain an even uniform sward is admitted generally but, under Victorian conditions, the use of drastic cutting harrows does not seem to be justified except for special purposes.

Mowing one of the Western District manurial trial areas.

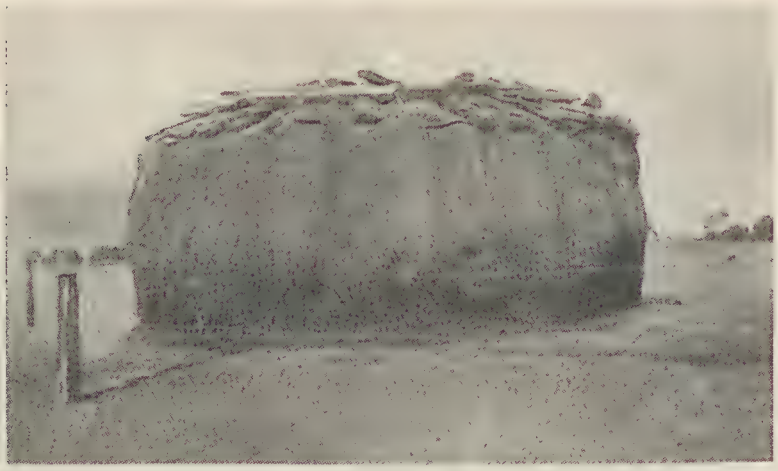
Intensive rotational grazing, generally, has not achieved the results that were expected from it in southern Victoria. With irrigation and under favorable natural conditions where the grazing season of the pasture is prolonged, the system provides a useful means of regulating growth and keeping the pastures in a vigorous leafy condition. In most districts in southern Victoria the yearly pasture growth is too uncertain and the rate of growth subject to too violent seasonal variations to enable the system of intensive rotational grazing to be carried out with the dairy herds. The winter growth is too slow and the spring growth too rapid and it is only for a short period in the early spring and during unusually favorable autumns that the rate of growth would be suitable for intensive rotational grazing. On most farms some form of rotational grazing usually has been adopted with good results, but it does not appear that additional benefits are gained from extreme subdivision into very small paddocks.

The pasture mixture and species trials illustrate the benefits to be obtained by the establishment of mixed pastures of suitable strains of grasses and clovers, and have shown that the locally developed strains of the better grasses and clovers are equal to the best imported ones.

The species plots sown to Victorian perennial rye-grass obtained from old permanent pastures have developed excellent permanent swards which appear to be just as persistent and more productive than the recognized Hawke's Bay, New Zealand, seed. Generally, the results of these experiments indicate that in Victoria attempts at pasture improvement should be confined to the recognized methods which have proved so successful under local conditions, rather than attempting to adopt practices which have been found more suitable under very different pasture conditions in other countries.

From the results recorded and observed throughout this experimental work it is apparent that the building up of soil fertility by the use of superphosphate must be the basis of all pasture improvement in southern Victoria. The increasing returns being obtained from potash in these experiments must not be taken as suggesting that superphosphate may be dispensed with, but rather as serving to indicate that other soil factors may limit growth and emphasising that in the development of pastures by the use of superphosphate the importance of building up the general soil fertility must not be overlooked.

When the work was commenced in 1932 no more than one million acres of pasture land were being top-dressed annually in Victoria, while the latest figures indicate that this area has now been extended to 3½ million acres—a development to which the work of the Victorian Pasture Improvement League has contributed very materially. Top-dressing of pasture land with superphosphate had been widely advocated by the Victorian



A stack of grass silage on a South Gippsland farm.

Department of Agriculture during the previous ten years, demonstration plots were conducted in country districts and extension work was actively carried out by means of the Better Farming Train. The early advocacy of top-dressing aroused considerable doubt and opposition, and though some advanced farmers had already learnt the benefits to be obtained from the treatment it is only during the past six years that the large extension has taken place and its value generally recognized.

Pasture improvement demands the presence of species responsive to superphosphate, and where such plants are not present, steps must be taken to introduce them. Subterranean clover and the natural trefoils have proved invaluable for this purpose. In the naturally favoured areas, or after the clovers have built up the soil fertility, it is necessary to sow or introduce other species, usually perennial, having a longer season of growth than the clover. The best leafy strains of appropriate species should be used for this purpose. Steps must be taken to ensure the efficient consumption of the increased pasture growth for which purpose subdivision of the larger paddocks and the adoption of some form of rotational grazing becomes desirable.

Where dairying is practised it will be necessary to use pasture harrows to distribute animal droppings and to maintain an even pasture free from rank weedy patches. The cutting and storing of the surplus spring growth either as silage or grass hay will be necessary both to prevent the opening up of the sward and to provide feed for stock at periods of seasonal shortage. The repeated cutting of the same paddocks for grass hay should be avoided and if possible the hay should be fed back to stock on the fields from which it was taken.

Weather Conditions During 1937.

The past year has been notable for extreme variations in weather conditions in the different districts of the State. The rainfall was generally below average, and though some districts benefited from the dry winter, most areas were very adversely affected. While the total annual rainfall was below average, a more serious defect was its bad distribution. Heavy rains which fell early in January prolonged the 1936 growth, but from then on the autumn was dry, and the rains which did fall later were generally too late to promote growth before the winter.

The winter was notable for a succession of severe frosts, the ground being very dry in most districts. Fortunately, the good quality of the dry standing feed, particularly where it had been top-dressed, and the absence of bleak cold weather enabled the stock to survive the winter in surprisingly good condition. Fair growth was made in the early spring, but the soil moisture was soon exhausted and growth was checked. Dry weather continued and checked growth, but, fortunately, good soaking rains in mid-October revived growth and averted what threatened to be a disastrous season in most districts. Dry hot weather prevailed in November and the pasture season terminated very much earlier than usual. Since then the season has been normally dry and there has been little or no summer growth.

Extension of Work.

Tentative arrangements made early in 1937 provided for the extension of the work into the Benalla, Wangaratta, Kiewa, and Yering districts, as well as for the establishment of new trials in the Western District.

During the past year officers made visits on advisory work to the Benalla, Wangaratta, Kiewa, Euroa, and Mansfield districts, the work occupying a period of approximately eight weeks. A number of prospective sites for experimental plots were inspected during this time, and suitable ones have been selected at Kiewa and Wangaratta. A visit was made to the Willaura district following

a request for experimental plots in that area, but for the present it has been decided to confine work in that district to advisory rather than to experimental work.

Sites for new grazing trials have been inspected in the Western District and it is intended that work on the establishment of these plots shall be commenced early in the coming autumn.

Chemical Composition of Pastures.

In order to ascertain the extent to which the various fertilizers may influence the chemical composition of the pasture, chemical analyses were made of the clippings from a number of the trials during the past spring.

This work is as yet incomplete, but the figures already obtained indicate that there is a considerable variation in the mineral content of the clippings according to the manurial treatment given. Lime has not shown much effect on the mineral composition of the produce, but both potash and superphosphate, on responsive soils, have shown a marked ability to increase the mineral content of the fodder

Taking soil samples from a Western District Major plot.

GENERAL SUMMARY OF 1937 RESULTS.

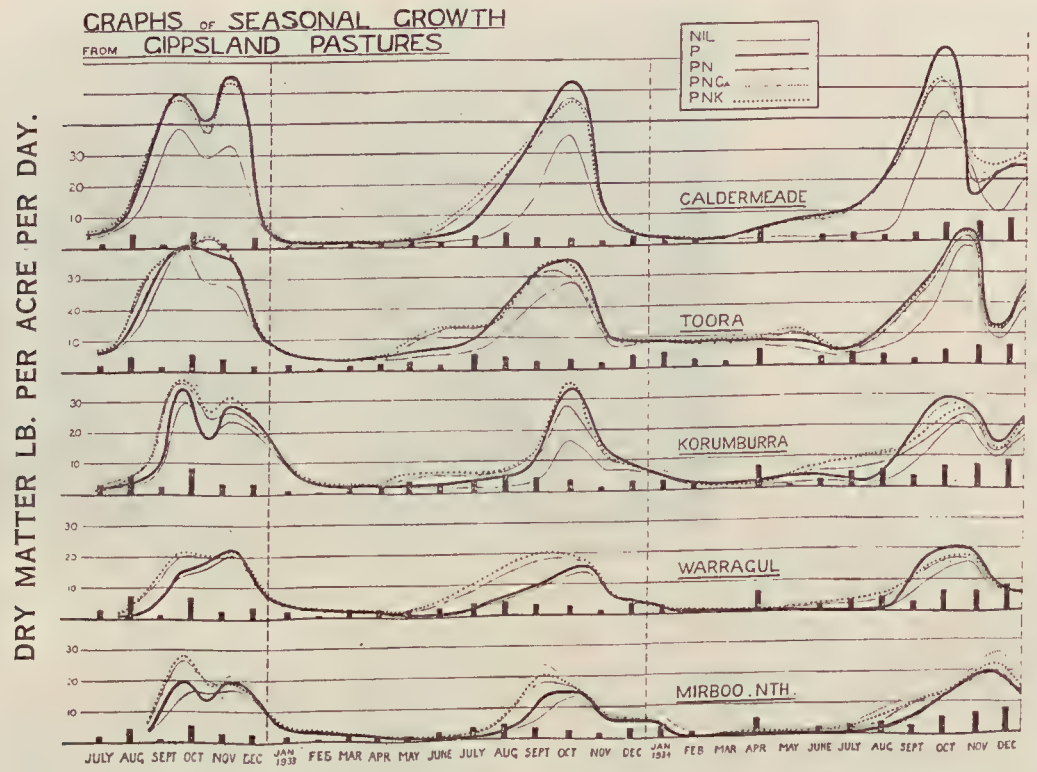
(Non-Irrigated Pastures.)

Manurial Trials.

During the past year the results recorded from the manurial trials have, in general, been similar to those obtained in the previous year. Superphosphate continued to give good results on most of the trial areas, but it has become increasingly obvious that the maximum return from superphosphate is obtained only with efficient pasture management. With proper management superphosphate enables soil fertility to be built up to such an extent that a greatly improved pasture can be maintained, but where no effort is made to build up the general fertility of the soil, improvement of the pasture is likely to be temporary only. Used in this way superphosphate must be regarded as affording a means of exploiting the plant food reserves of the soil, and such misuse of this most valuable fertilizer would eventually bring about a condition similar to that now reached on some of the Western District major plot mowing areas. In last year's report the value of potash in maintaining soil fertility when the land is subjected to a heavy drain of plant food was shown. During this past year similar responses to potash have been obtained and, though the increases are still most marked in the Western District, there have been cases of substantial improvement in the Warragul area.

In considering the results of the mowing trials, it must be remembered that they have been obtained under a system of regular cutting of pastures to which there has been no return to the soil of the plant food contained in the clippings, either in the form of dung or urine. In such circumstances the drain on soil fertility is abnormally severe, and the depletion will be much more rapid than it would be under normal grazing conditions. This explains in part the deficiency of potash which is manifest. Evidence that a similar stage may eventually be reached under ordinary farm practice is afforded by the marked results being obtained on some farm paddocks in the Cobden District, and by the potash strips across the grazing areas adjoining some of the mowing plots.

The marked responses to potash now being obtained must be taken as indicating a condition which may have to be met on improved pastures in the future, and suggest that efforts should be made to conserve the present soil potash supply rather than to wait until the trouble occurs and then attempt to remedy it with expensive potash fertilizers. Although mowing accentuates the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The effect of various manurial treatments on some Gippsland pastures. (contd. on opp. page.)

Graphs showing the effect of various manurial treatments on Gippsland and Western District (p. 164–5) major plot pastures during the period, July, 1932, to February, 1938. The manurial dressings indicated in the legend are as follow:—Nil = No Manure; P = superphosphate 2 cwt. p.a.; P.N. = super. 2 cwt. + sulphate of ammonia 1 cwt. p.a.; PNCa = super. 2 cwt. + S. of A. 1 cwt. + lime 1 ton p.a. (1932 only); PNK = super. 2 cwt. + S. of A. 1 cwt. + potash 1 cwt. p.a.

The small black vertical columns indicate the monthly rainfall in inches.

Note the poor growth at Warragul and Mirboo North.

depletion of available plant food the tests show the trends in that direction under ordinary pasture conditions.

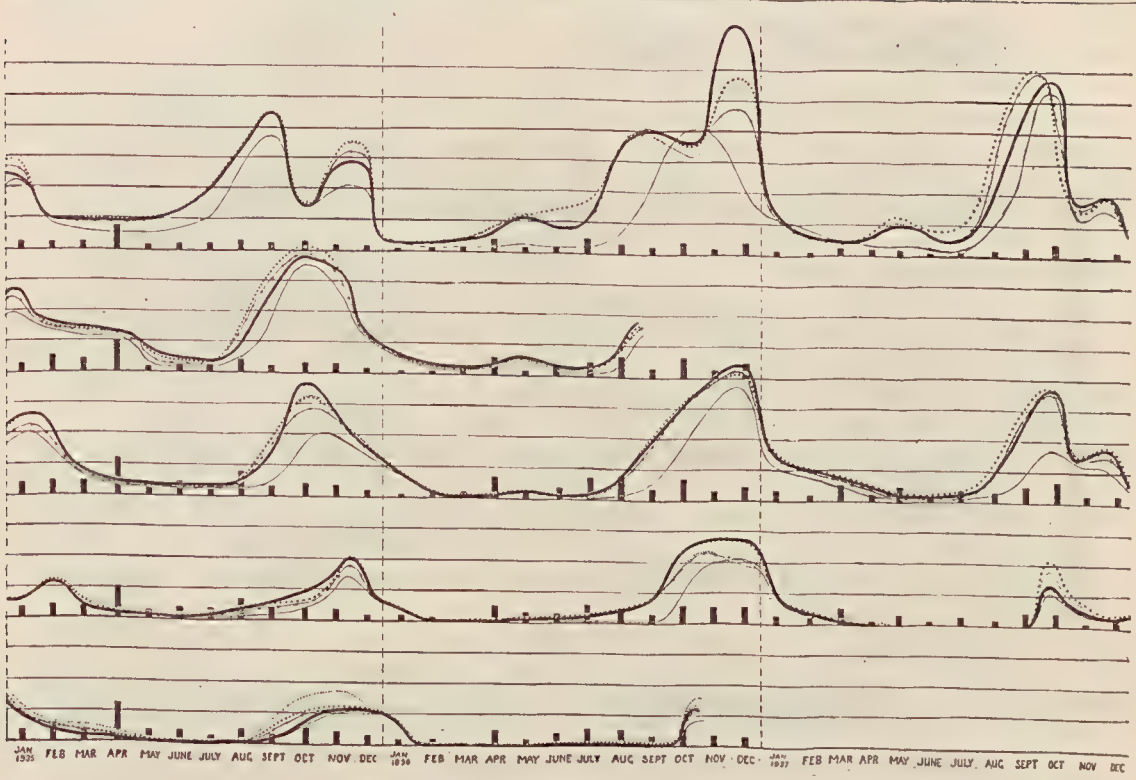
The work with lime in the Warragul and Mirboo North districts has been continued, but it now appears that the effect of the 1 ton dressings of calcium carbonate given to the mowing plots in 1932 is largely spent. More recent dressings of lime applied in various forms to the Warragul and Mirboo North plots have effected an improved growth of pasture.

Nitrogen applied as sulphate of ammonia gave a fair response in the early spring of 1937, but as in previous years its use could not be advocated as economic for the production of early pastures.

Superphosphate.

In the first years of the trials it was noticed that superphosphate showed its greatest effect on the lighter sandy soils, and the heavier clay soils were much slower in responding. It is still observed that the light soils respond more quickly to superphosphate, but it is also found that it is those same soils which are most rapidly depleted of the other plant food constituents. Plots on the light soils in the districts of Larpent, Cobden, and Cudgee, after a period of prolonged mowing, have reached a stage at which potash has become the factor limiting growth, and little or no winter growth is made on these plots unless the dressing of superphosphate is supplemented with potash.

The results obtained from the Larpent and Cudgee trials show that, in the first years, plots receiving superphosphate alone gave a big increase in yield as compared with the "no manure" plots. The magnitude of this increase has been declining each year, and in the past year the difference between the superphosphate and the "no manure" plots was insignificant. The heavier dressing of 3 cwt. of superphosphate per

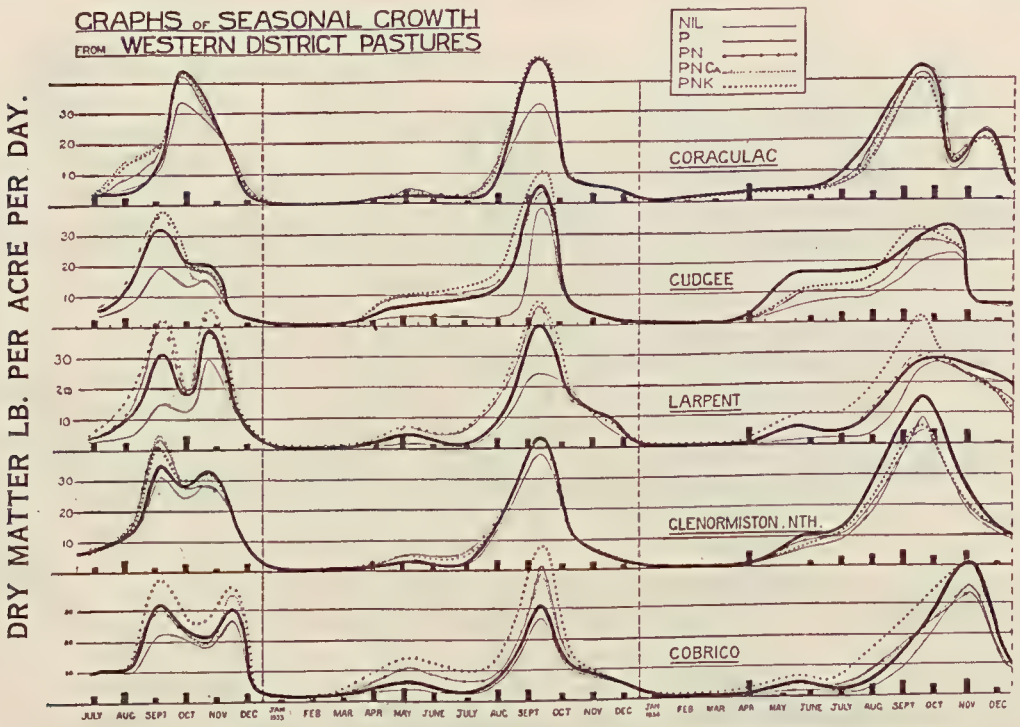

JAN 1935 FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC JAN 1936 FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC JAN 1937 FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC

acre failed to improve the position, but it is of interest to note that under these conditions the additional dressing of nitrogen showed a small increase in growth over the year. Spectacular increases in growth have been obtained on these plots when additional dressings of potash have been applied, and these superphosphate plus potash plots, despite regular mowing, appear to be growing as vigorously as they did in the first years.

The general vigour and productivity of the swards on the Larpent and Cobrico major mowing areas had declined so greatly, as a result of repeated cutting, that it was decided to give a basal dressing of 1 cwt. of potash to the entire centre bay of the plots in 1936. This was repeated in 1937, and since then the proportion of clover and vigour of growth on this centre bay, as compared with the normally treated end bays, has been most outstanding.

As usual, the manurial effects have been most marked in the early spring, and the following table gives a comparison of the produce obtained from the manured plots on the centre bay (normal manuring plus potash) and the end bays (normal manuring) at Larpent and Cobrico during the past early spring period.

—	Yields in Cwt. of Greenstuff per Acre.					
	No Manure.	Super. 2 cwt.	Super. 2 cwt., S. of A. 1 cwt.	Super. 2 cwt., S. of A. 1 cwt., Lime 1 ton.	Super. 2 cwt., S. of A. 1 cwt, Potash 1 cwt.	Super. 3 cwt.
	cwt.	cwt.	cwt.	cwt.	cwt.	cwt.
Larpent (growth period 26th July, 1937 to 14th October, 1937)—						
Normal manuring	24	19½	36	37	63½	18
Normal manuring + potash 1 cwt.	26½	48	51	61	75½	42
	cwt.	cwt.	cwt.	cwt.	cwt.	cwt.
Cobrico (growth period 27th July, 1937 to 10th November, 1937)—						
Normal manuring	45	58½	67	69	127½	59½
Normal manuring + potash 1 cwt.	61	142½	117	134	161	120½


GRAPHS OF SEASONAL GROWTH
FROM WESTERN DISTRICT PASTURES
NIL
P
PN
PNC
PNK
DRY MATTER LB. PER ACRE PER DAY.
CORACULAC
CUDGEE
LARPENT
GLENORMISTON, NTH.
COBRICO
JULY AUG SEPT OCT NOV DEC JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC

The effect of various manurial treatments on some Western District pastures.

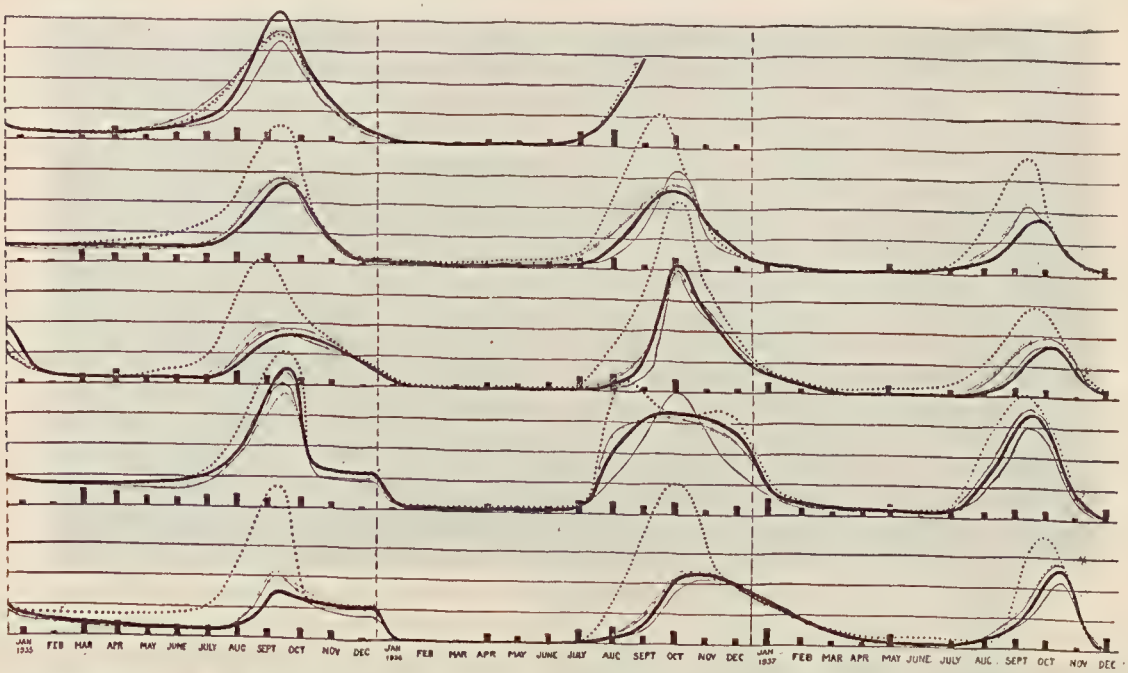
(continued on opposite page.)

For legend see page 162. Note the progressive increase due to potash on most of these plots.

The potash deficiency has not become so marked on the plots on heavier clay soils, but even on these the same tendency exists and it is apparent that if pasture production is to be maintained under a system of heavy phosphatic manuring care must be taken that the available soil potash supplies are not depleted. Where grazing or wool growing is practised on light land, the drain of potash is not likely to become acute but, with dairying and particularly when grass hay is cut regularly, the lack of potash may soon check growth on the lighter soils.

Showing increased clover growth due to potash. Compare this with the illustration on the next page (super. only).

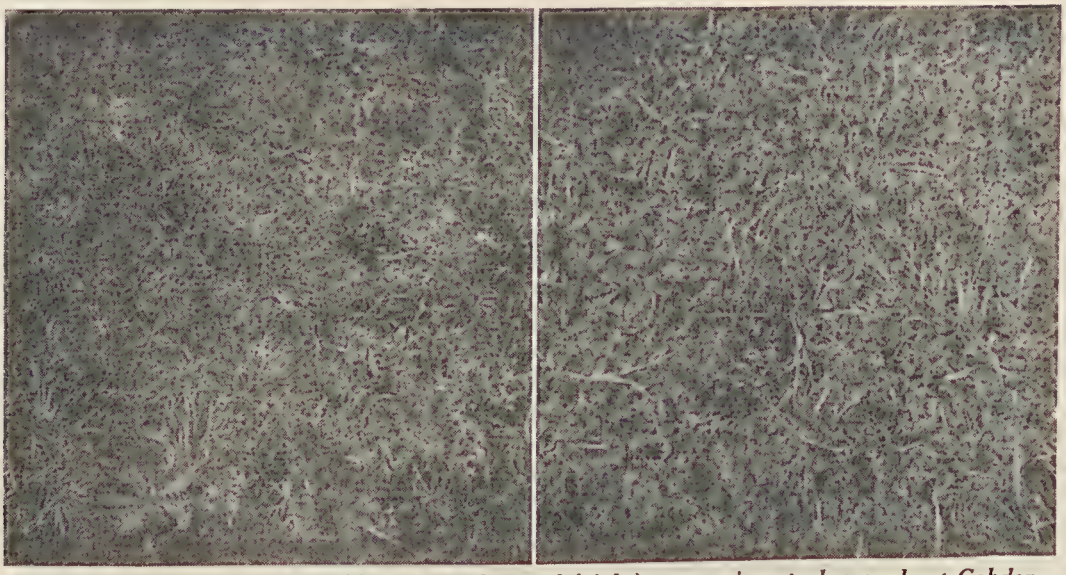
Quite a number of cases of deteriorated improved pastures have been investigated during the past year and in almost every case it has been found that the trouble has been caused by the methods of pasture management not being satisfactorily adjusted to fit in with the increased soil fertility brought about by the use of


JAN 1935
FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC
JAN 1936
FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC
JAN 1937
FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC

superphosphate. In some instances the soil fertility had been carried off the farm in the form of grass hay, in others it had accumulated as excessive amounts of manure at gateways, yards, and against shelter hedges, while in other cases the increased soil fertility had resulted in the encouragement of the poorer annual grasses, such as barley grass, soft brome, hair-grass, and Yorkshire fog or cape weed. Once these inferior plants take possession of an improved pasture, vigorous measures must be taken to check them and it may be necessary to burn the feed or plough and crop the paddock in order to restore the vigour of the clovers and better grasses. The results of these experiments indicate that superphosphate is the basis of all pasture improvement effected through fertilizers, but its use must be accompanied by effective pasture management if the maximum benefit is to be obtained.

The usual dressing of superphosphate given in these tests has been 2 cwt. per acre applied each autumn, and though it is sometimes contended that heavier dressings than this may be of benefit the results indicate that there is not likely to be any material advantage from regular heavier applications. Where good responses to phosphates are being obtained it is undesirable that the growth of pasture should be stimulated to such

Compare the clover growth in this illustration (super. only), with that on the previous page (super. + potash)—Colac district.



Showing contrast between (left) super. only; and (right) super. + potash swards at Cobden.

an extent that it will get beyond the ability of the stock and hay mower to keep it in check, and, except under dairying conditions, annual dressings in excess of 1 cwt. per acre will usually demand extra care in grazing.

Potash.

Potash has continued to give good responses on the responsive areas, and the newer plots which were established in the Cobden–Colac areas have shown marked contrasts also. The response to potash appears to be related to the natural fertility of the soil and the extent to which fertility has been lowered by exhaustive cropping (or grass hay cutting). Usually, on the lighter soils, where the bigger initial responses to superphosphate were obtained, the greater are now the responses to potash. The soils in the Western District, generally, have shown a much greater response than those of Gippsland, but quite marked results have been obtained on some plots in the Warragul district.

During the past year the strips of potash which were located across the grazing areas did not show as good a response as they had in previous years. This appeared to be due to the lack of clover in these pastures, the suppression of which had been brought about by the dry season and attack by pea mite. Where the clover was present in normal amount, the potash response appeared to be quite as marked as usual. Material responses to potash were seen last year on a number of small observational plots situated on farmers' paddocks in the Cobden–Colac areas but, while it is apparent that a considerable portion of this country would respond well to potash, the indiscriminate use of this fertilizer throughout these districts would probably not give satisfactory results.

Where pastures have reached a stage where they do not respond satisfactorily to superphosphate alone, better results would probably be obtained by using a mixed phosphate–potash fertilizer. Potash exerts its most valuable effect in stimulating the re-establishment of weakened clover, and a satisfactory response cannot be expected if the grasses are permitted to grow tall and choke out the clover. On pastures that have been kept short, potash has fostered the growth of the clovers, but where the grass has been permitted to make tall growth in the late spring, the clovers have continued to be suppressed, despite the use of potash.

Sulphate of Ammonia.

Some fair responses to sulphate of ammonia were obtained during the early part of last spring but, as usual, were not sustained, and growth on these treated pastures later declined. Throughout these trials it has been found, almost invariably, that nitrogenous fertilizers give a sharp stimulus to growth in the early spring period, but the treatment, when applied to mixed clover-grass swards, usually results in a suppression of the clovers. The productivity of these pastures later declined, owing to the elimination of the clovers, which provided the pasture with its natural nitrogen supply.

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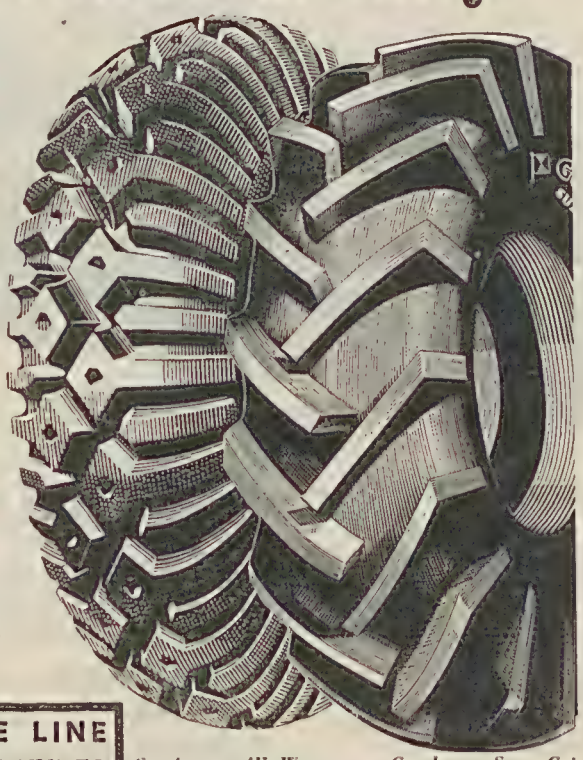

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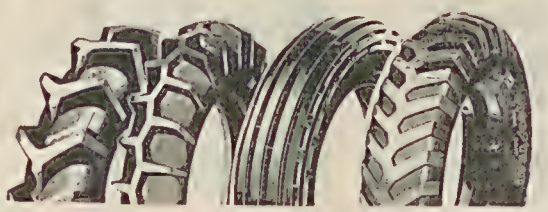

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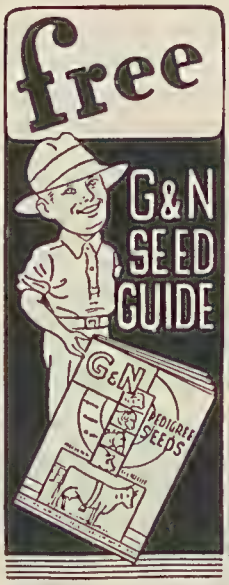

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PEDIGREE **SEEDS**

Evidence that the injurious effect on the pasture is not brought about solely by the elimination of clovers has been afforded by the Nalangil trials, where the pasture treated consisted of almost 100 per cent. pure rye-grass. In last year's report it was stated that this plot had shown very good responses to nitrogenous fertilizer without the appearance of any subsequent ill effects, but the behaviour of the nitrogen-treated strips during this past year showed that they had not escaped the usual depression. Growth on the nitrogen-treated strips, during the past autumn and winter, was considerably poorer than on the untreated strips.

Victorian pasture soils, in general, are very short of available nitrogen during the winter months, and although it might be thought that under such circumstances nitrogenous fertilizers should prove useful, usually the reverse has been found to hold, for although these fertilizers give a temporary stimulus, their ultimate effect is to lessen the natural nitrification brought about by the clovers. As a result they ultimately lower the vigour and productivity of the pasture.

The only plot which gave a really satisfactory response to sulphate of ammonia in last year's trials was the small grazing area at Warragul (Ellinbank). Here, on an impoverished pasture, excellent growth was obtained during the spring on the plot which had received superphosphate, lime, and sulphate of ammonia, but plots receiving either superphosphate alone or superphosphate plus lime or sulphate of ammonia, made comparatively poor growth. On some of the depleted Western District plots, superphosphate plus nitrogen showed a material increase over superphosphate alone, when the clovers were absent from the sward. As soon as the clovers were restored by means of potash, the increases from the nitrogen treatment disappeared.

Lime.

In the first year, lime was applied to the various strips at the rate of 1 ton per acre, in the form of fine calcium carbonate. Since then, further lime trials have been laid down in which different forms and quantities of lime have been used. On most plots no appreciable response to lime has been obtained, but in a few cases it has given good results, usually when applied in combination with superphosphate, to land which is not responsive to superphosphate applied alone. Where pasture land is responsive to lime it has been noted that all forms have been effective and the response is dependent on the amount rather than on the form of lime used.

The most marked responses to lime have been recorded on plots located on the red clay soils of the Gippsland hills, mainly on the old major plots and the newer mowing trials in the Warragul and Mirboo North districts. During the past season there were indications, on some of the responsive plots, that the effects of the original dressings applied in 1932 were becoming exhausted. Good lime responses continue to be obtained on the Departmental pasture trials at Kilmore and again these responses have been obtained irrespective of the actual form in which it was applied.

Though some Victorian soils have shown response to lime, most appear to be unresponsive, and the use of this material cannot be advocated unless trial strips suggest a satisfactory response.

Ground Rock Phosphate.

The immediate response from ground-rock phosphate is usually not as marked as that from superphosphate, but in these pasture experiments it has given good prolonged responses in the wetter districts. Though it cannot be regarded as preferable to superphosphate, it is apparent that this material provides a fairly readily available supply of phosphate under pasture conditions.

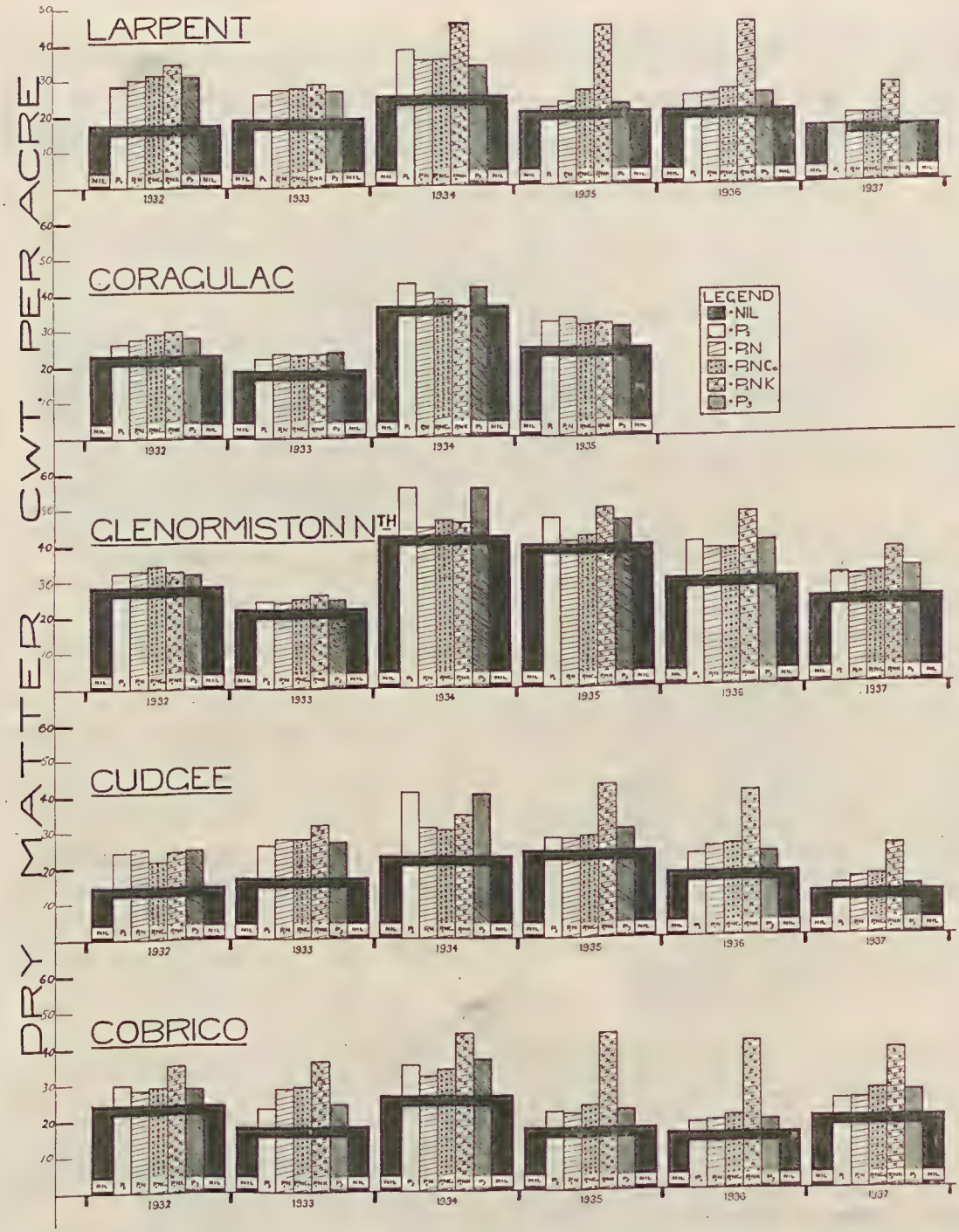
Blood and Bone.

This has also been used as a fertilizer in the pasture top-dressing trials and though some response has been obtained, the results have not been nearly so good as those from superphosphate.

Pasture Mixtures and Strains Trials.

When first established, each major and pilot plot included an area which was ploughed and cultivated and sown to small plots of grass and clover mixtures, rye-grass strains, and pure species of grasses and clovers. The object of this section was to determine which permanent pasture mixture was best adapted to the conditions provided and to ascertain if any species or strain would show superior development. All of the common grasses and clovers, and any others likely to succeed under Victorian conditions, were included in the sowings, and it was hoped that by use of various species it might have been possible to promote extra growth, both within and without the usual growing period.

Most of the plots made a good germination and establishment in the first year, and their persistence up to the present time has afforded many interesting comparisons. These plots have served to emphasize the limitation placed on growth by the climatic conditions and show that,

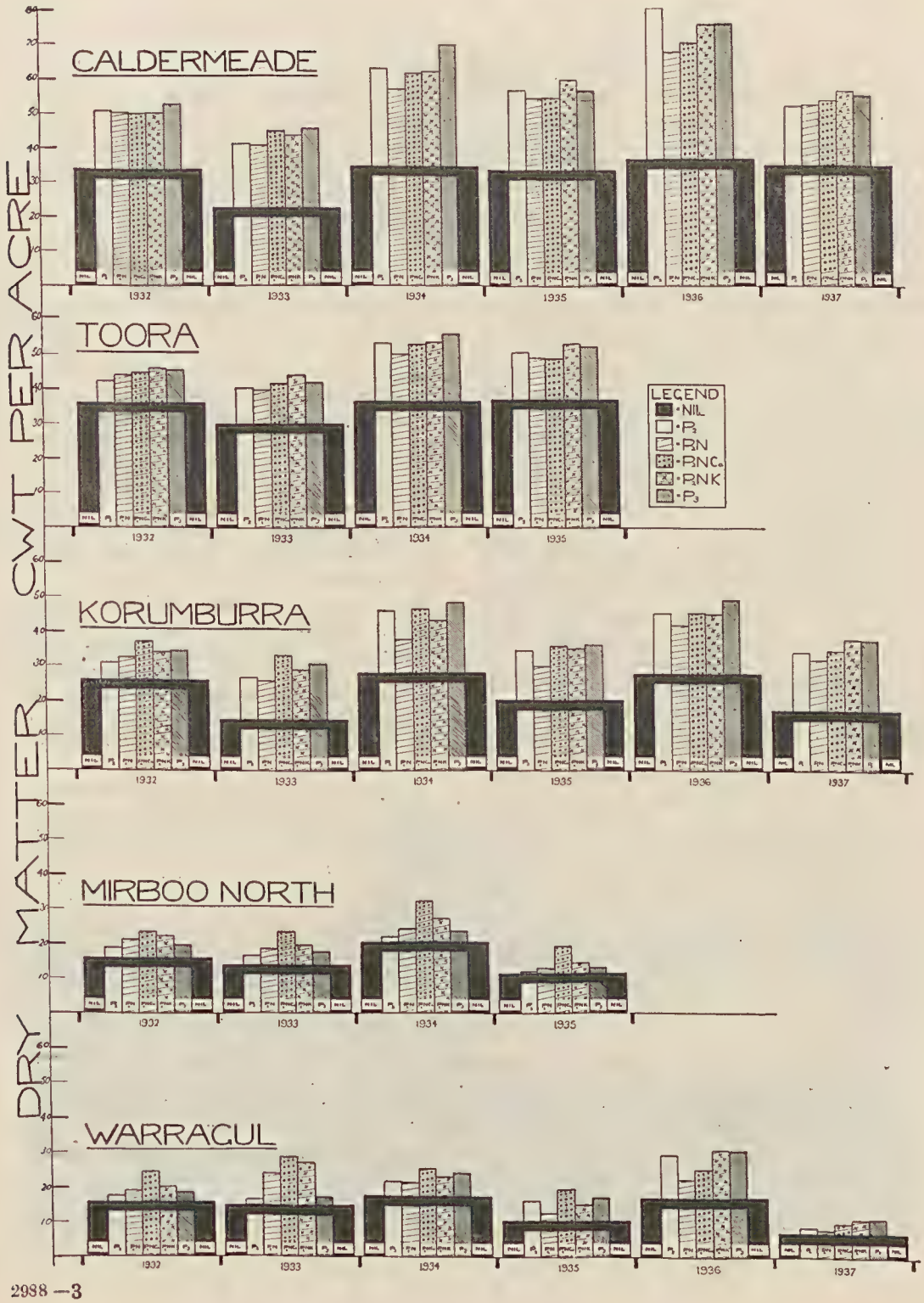


Comparative yearly growth—Manurial Trials 1932-37. Above—Western District. Opposite—Gippsland.

Total yearly growth for each treatment measured in cwt. of dry matter per acre is indicated by the height of the vertical columns. The "No Manure" plot yield, shown in black, has been continued across the columns representing the yield from the manurial treatments to illustrate the increases due to the fertilizers.

Details as to the rates and times of manurial applications, time of cutting and seasonal responses are given in the individual reports of the major plot trials.

The manurial dressings indicated in the legend are as follows:— NIL = No Manure. P_2 = Superphosphate 2 cwt. per acre. PN = Super. 2 cwt. + Sulphate of Ammonia 1 cwt. p.a. PNCa = Super. 2 cwt. + Sulphate of Ammonia 1 cwt. + Lime 1 ton (1932 only) p.a. PNK = Super. 2 cwt. + Sulphate of Ammonia 1 cwt. + Potash, 1 cwt. p.a. P_3 = Super. 3 cwt. per acre.


DRY MATTER CWT PER ACRE
CALDERMEADE
1932
1933
1934
1935
1936
1937
TOORA
1932
1933
1934
1935
LEGEND
NIL
P
PN
PNC
PNK
P
KORUMBURRA
1932
1933
1934
1935
1936
1937
MIRBOO NORTH
1932
1933
1934
1935
WARRACUL
1932
1933
1934
1935
1936
1937

although the use of winter-growing species may encourage extra growth during this lean period, very little can be done to overcome the effect of summer drought. Deep-rooted species, such as lucerne and strawberry clover may make good summer growth in favored positions where subsoil moisture is available, but the ordinary shallow-rooted pasture species are unable to make any material growth during the dry summer period. Summer-growing species such as paspalum, kikuyu, and to some extent cocksfoot and red and white clovers, have not made satisfactory summer growth, except where soil moisture conditions were unusually favorable.

During the past year trials were initiated, using the Evening Primrose (*Oenothera sp.*) and Plume or Pampas-grass (*Gynerium sp.*). It is hoped that under special soil conditions these species may provide some feed outside the normal growing season. Notes on the establishment and behaviour of the various species in the previous years are to be found in the earlier annual Pasture Improvement League reports, and during the past year their growth has been similar to that recorded in 1936. (See this *Journal*, April, 1937.)

Rye-grass and subterranean clover are the dominant species on most of the Western District plots while in Gippsland, rye-grass and white clover are most conspicuous on the flats, with cocksfoot and subterranean clover on the hill country. Mixtures of grasses and clovers have in all cases provided a better pasture than single species, and usually the most productive plots are composed of a mixture of perennial rye, cocksfoot, subterranean and white clovers. Where other species such as phalaris, timothy, red and alsike clovers, will persist in the mixture, their inclusion in small amount would also be desirable. Other species such as *Lotus major*, strawberry clover, lucerne, meadow foxtail, paspalum, kikuyu, and prairie-grass, have special value under unusual soil conditions, and their use should be restricted to those situations. With normal soil conditions in southern Victoria and encouraged by top-dressing with superphosphate, the most productive pastures can be developed by use of some or all the species, perennial rye, cocksfoot, subterranean and white clovers, and it is under special conditions only that other species would be required.

Portion of the species trial was devoted to comparing the vigour and persistence of locally grown rye-grass, harvested from old fields, with the best imported strains of rye-grasses. The Victorian strains of perennial rye have developed dense persistent swards and appear to be quite as good as the best New Zealand types. The plots sown with the annual or short-lived types of rye-grass have long since become thin and weedy and illustrate the futility of attempting to establish a permanent pasture with these. Unfortunately a large quantity of inferior rye-grass has been sown in Victoria in the past, and in view of the poor results obtained from such seeding it has frequently been concluded that the land is not capable of growing rye-grass. Rye-grass demands good soil fertility if it is to make vigorous growth, but in southern Victoria it will persist on most soils, other than those that are excessively loose in texture, if a good strain of seed is used.

Phalaris has continued to make satisfactory growth on the heavy clay soils or on the more fertile soils where the winter growing conditions are good. It has made satisfactory growth on the better soils in districts which may be too dry for perennial rye-grass but on the poor shallow soils of southern Victoria its growth has not been satisfactory.

Brown top, Chewing's fescue, Kentucky blue, meadow foxtail, and timothy have persisted on most of the plots but they have not made much bulk of feed.

Growth on the plots originally sown to the short-lived species, has been replaced by the poorer grasses, such as Yorkshire fog, hair-grass, soft brome, which now flourish, together with some plantain and flat weed and annual trefoils.

The results of major plots will be found on page 197 of this Journal. The results obtained from the new-series mowing trials, the tests in irrigated districts and the lighter pastorial areas of the State will appear in a subsequent issue.

Irrigation at Boort

Lucerne and Summer Fodder Competitions, 1938

Report of the Judge—E. T. Beruldsen, B.Sc. (Agric.), Senior Irrigation Officer

IT is very gratifying to be able to record progress in the development of the Boort irrigation areas during the twelve months which have intervened since the last competitions. The extension of the irrigated area in the district is the least important progressive move. That implies merely that land owners in the district who up till the present had not been particularly interested in irrigation have been so impressed with the results obtained by the pioneers of irrigation that they, too, are anxious to take advantage of the irrigation water at their disposal. Where the most important progress has been accomplished is in the areas already established, and the largest contributing factor to that progress has been the extension of top-dressing with superphoshate. Not only have additional areas of lucerne and pasture been top-dressed, but the rate of application of the superphosphate has been increased liberally in certain notable cases.

It has been proved definitely that an annual dressing of at least 2 cwt. of superphosphate per acre is essential to maintain lucerne in active production, to ensure the suppression of weeds and increase the longevity of the stand. Another aspect which is not generally considered, however, is that, under certain circumstances, superphosphate can result in a more economical use of the irrigation water. Early in the spring the outlook for the present season as regards supplies of irrigation water was rather gloomy. One of the competitors, Mr. J. D. Fyfe, decided to increase his top-dressing to three bags per acre on all his best lucerne stands. Mr. Fyfe considered that the extra dressing of manure might partly compensate for a possible deficiency in the supplies of irrigation water. Further, if the lucerne did not utilize the extra manure during this season, at least the general fertility level was being built up, and the stand would benefit eventually. That

Topdressing with superphosphate, at the rate of three bags per acre, on Mr. J. D. Fyfe's property.

Mr. Fyfe's ideas were sound is borne out by the fact that in tests at the Research Farm, Werribee, where manurial tests were superimposed on watering tests, 4 cwt. of superphosphate with a total of 18 inches of irrigation water for the season yielded as much as 2 cwt. of superphosphate with 24 inches of water. Certainly, the extra 2 cwt. of superphosphate cost more than the extra half acre-foot of water, but the increased yield attained with either treatment paid several times over for the extra cost of either the manure or the water.

Pressing lucerne hay on the property of Mr. J. D. Fyfe.

Fortunately, the late October rains replenished storages, and irrigation facilities were better if anything than in previous seasons. Fullest advantage of the extra manure was taken by the lucerne, and a very decided improvement in the yielding capacity of the stands was observed. Mr. Fyfe's example was emulated by Mr. L. E. Weaver, and, in consequence, the record of production from his lucerne stand this season has been remarkable.

A strong demand for cheaply conserved fodder has stimulated the practice of reserving the lucerne stands for cutting, and grazing of the stands has not been carried out so persistently as in the past. This is a better practice, and must result in the economic life of the stand being lengthened. There is no doubt that more or less continuous grazing of lucerne is detrimental to the stand, as the lucerne plants will soon thin out under these conditions. This should apply particularly in the Boort district, where with comparatively large areas obtaining, and consequent inadequate subdivision of the lucerne, there is less opportunity for a system of rotational grazing and proper spelling of the lucerne between grazings. Under these extensive conditions, the plants which are rather harshly treated by the stock at one grazing period are usually the plants which receive the concentrated attention of the animals at the succeeding grazing.

At Mr. Fyfe's property, it was an inspiring sight to see a recently constructed shed nearly full of pressed lucerne hay. The shed is designed to hold 500 tons. Already 150 tons of this season's hay had been sold, and there were two more cuts of lucerne to be made this season. It is rather interesting to recall that, in the Boort Fodder Conservation Competition last year, according to the rules stipulated, it was considered that Mr. Fyfe had no fodder conserved in excess of the requirements for the stock on the property, yet, last year, 200 tons of pressed lucerne hay were sold without unduly depleting the fodder reserves. As was pointed out in the report on that competition, the irrigationist had the advantage over the dry farmer in that by the establishing of both winter growing and summer growing pastures, he was able to even out to a degree the available grazing throughout the year.

Another view of Mr. Fyfe's hay presser.

With regard to the watering of the lucerne, it is

recognized at Boort that there cannot be the same regularity of supply or irrigation water as occurs in the more closely settled irrigation districts. This is not a serious disadvantage when dealing with soil which is relatively permeable and which absorbs water freely, but when less penetrable soils are considered, infrequent watering combined with poor absorption will not induce anything but a stunted growth of lucerne. There were several cases noted where a system of supplementary watering would have proved beneficial. This method involves a second application of water to the already moist ground during the same watering period. Care must be exercised to shut the water off on the bays much sooner than when the initial application was given. At least a 50 per cent. better penetration will result, and enable the lucerne plants to withstand any rather long interval between watering periods. This practice is more efficient and more economic than the more costly method of subsoiling, or the application of soil amendments such as lime or gypsum.

Other cases were noted where the lucerne had thinned out to the extent where, although reduced to second-rate stands, there was still too much lucerne left to warrant ploughing up and rehabilitation. In the black permeable soil type where adequate penetration of water is effected, and where the grading is still efficient, it might be possible to cultivate the stand and sow down perennial rye-grass and wild white clover when next top-dressing the lucerne. It would be possible to convert the old lucerne stand into a perennial pasture. In any case this would be preferable to allowing inferior grasses and weeds to invade the thinned out stand. A summer growing species such as white clover would respond to summer irrigations while an annual such as subterranean clover would not.

A practice which has become popular in the district is the late summer watering of fallow in preparation for the wheat crop. This was commented upon favorably in the report last year, and there is no doubt that the results are outstanding.

Lucerne Exhibits.

Mr. L. E. Weaver again gained first place with a stand which was sown on fallow in April, 1935, with 8 lb. of lucerne, 1 lb. of perennial rye-grass, and ½ lb. of subterranean clover per acre. A dressing of 100 lb. of superphosphate per acre was used at seeding, half a bag was applied the following spring, and half a bag in the autumn of 1936. The lucerne was cut four times during the first year, and little grazing was done. A dressing of one bag of superphosphate per acre was applied in January, 1937, and the effect was very marked, as during the second year the lucerne had been treated very severely as regards grazing (750 sheep on 27 acres for five days every three to four weeks), and this dressing rejuvenated the stand sufficiently to enable Mr. Weaver to gain first place in the competition some weeks later. In September, 1937, two bags per acre were applied, and a further bag per acre in January this year. It is safe to assert that if it had not been for the liberal application of manure this lucerne stand could not have stood up to the rather harsh treatment which it has received this season in regard to cutting and grazing. It was grazed well into the spring, then the first cut was made on the 20th November, yielding 530 bales of pressed lucerne hay. Two further cuts have been made for a total production of 700 bales, and in between the three cuts there have been two grazings with 1,000 sheep for a week each time.

BEST THREE ACRES OF LUCERNE—BOORT.

Exhibitor.	Lay-out for Irrigation and Condition of Channels.	Apparent Yield.	Quality of Hay it would Produce.	Uniformity.	Freedom from Weeds.	Totals.
	20	20	20	20	20	100
1. L. E. Weaver ..	19	17	19	19	20	94
2. V. H. Lanyon	18½	18	19	19	18½	93
3. J. D. Fyfe ..	15	20	20	19	18	92
4. W. R. Slatter ..	16	14	18	18	19	85
5. G. A. Frost ..	14	15	19	16	16	80

Altogether only four waterings have been applied for the season, and this reflects the good quality of the land as regard permeability. The lay-out for irrigation was excellent, the grading having evidently been carried out very efficiently. The channels were free from weeds, and permanent stops were installed at intervals. No weeds were present in the competition area, and very few were noted in the whole area. The uniformity of growth was excellent.

Mr. V. H. Lanyon gained second place with a stand which was sown in April, 1934, on fallow with 10 lb. of seed and 90 lb. of superphosphate per acre. In addition, a cover crop of oats at the rate of 20 lb. per acre was sown, but

A luxuriant growth of lucerne seen at a field day just prior to judging.

it had had a smothering effect on the lucerne in small patches. The lay-out was excellent, and rather interesting, as the land slopes down from the shore of Lake Leaghur. The bays are narrow on the steeper slopes, and spread out fanwise on the more level ground at the bottom of the field. The water is pumped from the lake, and irrigation is carried out once a month. Approximately three weeks' growth was present at judging, and this was just coming out in flower. The uniformity of growth was good, and the stand was fairly free from weeds. There is a decided fall in the supply channel, and Mr. Lanyon has facilitated watering by having the lucerne growing in the channel to check the flow of water temporarily. Without the lucerne in the channel a permanent stop might be necessary at every bay. Top-dressing is carried out each year at the rate of 2 cwt. of superphosphate per acre. The stand had been cut for hay twice, and fed off twice since September. Each cut was approximately 1 ton per acre. The whole 6 acres had supported 250 ewes and their lambs for ten days at one grazing, and 400 lambs for ten days at the second grazing.

The most prolific growth was seen on the stand exhibited by Mr. J. D. Fyfe, who gained third place. The exhibit was part of a 90-acre paddock of lucerne which is graded in large bays 1 chain wide and 35 chains long. A very large stream is used at watering, and each bay can be watered in four hours, a 3 to 4 inch watering being absorbed. The check banks have to be solid, and were erected with the delver. This left a small gutter on either side of the checkbank which facilitates drainage of these extremely long bays.

The lucerne was sown with 8 lb. of seed and 90 lb. of superphosphate per acre in May, 1936, and was given two bags of superphosphate per acre last June. The paddock was grazed heavily with sheep until late October, and two cuts had been taken off since. The growth for the third cut was seen. At nineteen days it was 2 feet high, and as few flowers were in evidence it would grow considerably higher. The area exhibited was dense and uniform. Thistles on the checkbanks were the only weeds present.

Adjacent to the competition area was a paddock in which the lucerne stand was eleven years old. This paddock was particularly interesting in that perennial rye-grass and strains of white and strawberry clover were intruding where the lucerne had thinned out.

Summer Forages.

Summer forage crops constitute the principal outlet for expenditure of irrigation water in many parts of the district, particularly on the heavier classes of land. However, much of this land is well adapted for lucerne growing, and it will be a mark of further progress when some of these areas are laid down permanently in lucerne or pasture. With better facilities for irrigation there is no doubt that this will occur eventually.

The growing of summer forage crops does not encourage the use of better methods of grading, and for the purposes of this competition no points were allotted for lay-out for irrigation. Generally, the crops seen were not up to the

BEST THREE ACRES OF SUMMER FODDER—BOORT.

Exhibitor.	Condition and Quality.	Apparent Yield.	Uniformity.	Freedom from Weeds.	Totals.
	20	20	20	20	80
1. J. W. Watson .. (Saccaline)	18	19	16	18	71
2. J. B. Mann .. (Sudan grass)	19	16	17	18	70
=3. L. J. Sutton .. (Japanese Millet)	18	16	18	17	69
=3. Haw Bros. .. (Ambercane)	18	17	17	17	69
5. J. Gould .. (Sudan grass)	16	18	18	16	68
6. S. J. Dunstan .. (Japanese Millet)	16	14	17	16	63

[*Continued on page* 185.

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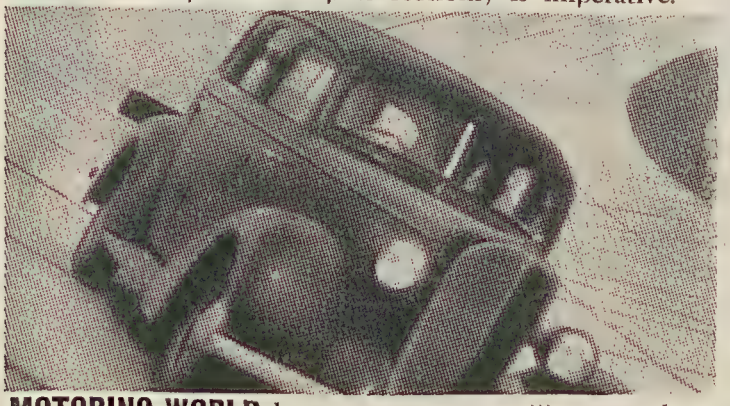

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White Dutch Clover, 1/6 lb.; N.Z. Wild White Clover, 2/- lb.
"Pilca-butta," Hunter River Lucerne, broad leaf, 1/9 lb.; 1/8 lb. in cwt. lots.
Hunter River Lucerne (contract grown), broad leaf, 1/8 lb.; 1/7 lb. in cwt. lots.
Hunter River Lucerne (broad leaf), good quality, 1/7 lb.; 1/6 lb. in cwt. lots.
Rape, True Giant Kangaroo, in 1 cwt. sealed bags, 8d. lb.; 65/4 cwt.
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Burnley Egg-Laying Competition

Results of 1937-38 Test

By H. F. Clinton, Poultry Expert

THE twenty-seventh Egg-laying Competition for fowls, conducted at the Burnley School of Primary Agriculture and Horticulture, commenced on 1st April, 1937, and concluded on 2nd March, 1938, a period of 48 weeks. There is no doubt that egg-laying competitions are most popular throughout the world. The support given by poultry breeders to the Burnley Competitions has been highly satisfactory and it is to be hoped that this will continue, for it must be remembered that these competitions are conducted for breeders by an independent and official organization, the State Government of Victoria, which, therefore, renders a very distinct service to the poultry industry.

Consideration was given last year to the suggestion that the results of egg-laying competitions conducted by the State Governments of Australia should be published in a uniform manner. Commencing with the 1937–38 competition, all birds at Burnley were weighed at the beginning and at the end of the test. In addition a table showing the monthly production has been prepared and is published for the first time.

Approximately 500 visitors attended a poultry farmers' field day at the Burnley Gardens on 5th March, 1938, when the opportunity was taken to inspect the competing birds at the conclusion of the 1937–38 competition. Short talks were given by Departmental officers, and an exhibit of poultry appliances, records, foods, and eggs was displayed in the pavilion. It is possible that the field day will become an annual feature.

The early history of egg-laying competitions in Victoria is of interest. One of the earliest records is that of a private competition conducted by Messrs. De Moor and Co., at Heidelberg in 1884. There appears to be no further record until the period 1904 to 1908, when three competitions were held at Dookie Agricultural College. At this time the proprietors of the *Poultry and Kennel World*, Melbourne, became interested and conducted two competitions at Fairfield and Northcote from 1908 to 1910. The first competition at Burnley was held in 1911–12. The late Mr. H. V. Hawkins, then State Poultry Expert, supervised the first two competitions, but since then they have been under the supervision of the late Mr. A. Hart (1919), Mr. A. V. D. Rintoul (1923), and Mr. W. C. Rugg (1936). Mr. R. Johnston was the curator in charge of the birds from the first until the latter part of the fourth competition, when he was followed by Mr. J. T. Macauley, who is in charge at the present time. At the beginning, 70 pens were erected at Burnley for teams of six birds. This number was increased to 100 in 1914–15. For the 1917–18 (seventh) competition, 150 single pens were erected. To make room for single pens the number of pens for teams was reduced to 70 for the tenth competition, 1920–21, while in 1921–22 the number of single pens was increased to 236. At the present time there is sufficient accommodation at Burnley for 656 fowls. During the 1919–20 competition trap-nests were introduced for the first time. The system of weighing every egg was introduced for the fifteenth competition, 1925–26.

The first duck egg-laying competition was held during 1928–29 when 62 single pens were erected. This section was discontinued at the conclusion of the 1936–37 (ninth) competition, through lack of support.

At Burnley, if at the end of 48 weeks a team of six birds or a single bird is likely to break the existing record for twelve months, it is retained for that period. The twenty-seventh competition for fowls has just concluded and the records to date for twelve months, since the commencement of the competitions, are as follows:—

Light Breeds.—Team: W. N. O'Mullane, 1914–15, White Leghorns, 1,699 eggs (qualified for size of egg during the month of July), (dry mash). Single bird: J. L. Edgcumbe, 1931–32, White Leghorn, 337 eggs, all first grade (wet mash).

Heavy Breeds.—Team: Wingood Poultry Yard. 1927–28, Black Orpingtons (now Australorps), 1,723 eggs (110 2nd grade), (wet mash). Single bird: W. Cullen, 1923–24, Black Orpington (now Australorp), 338 eggs (last egg weighed $2\frac{7}{16}$ oz.), (wet mash).

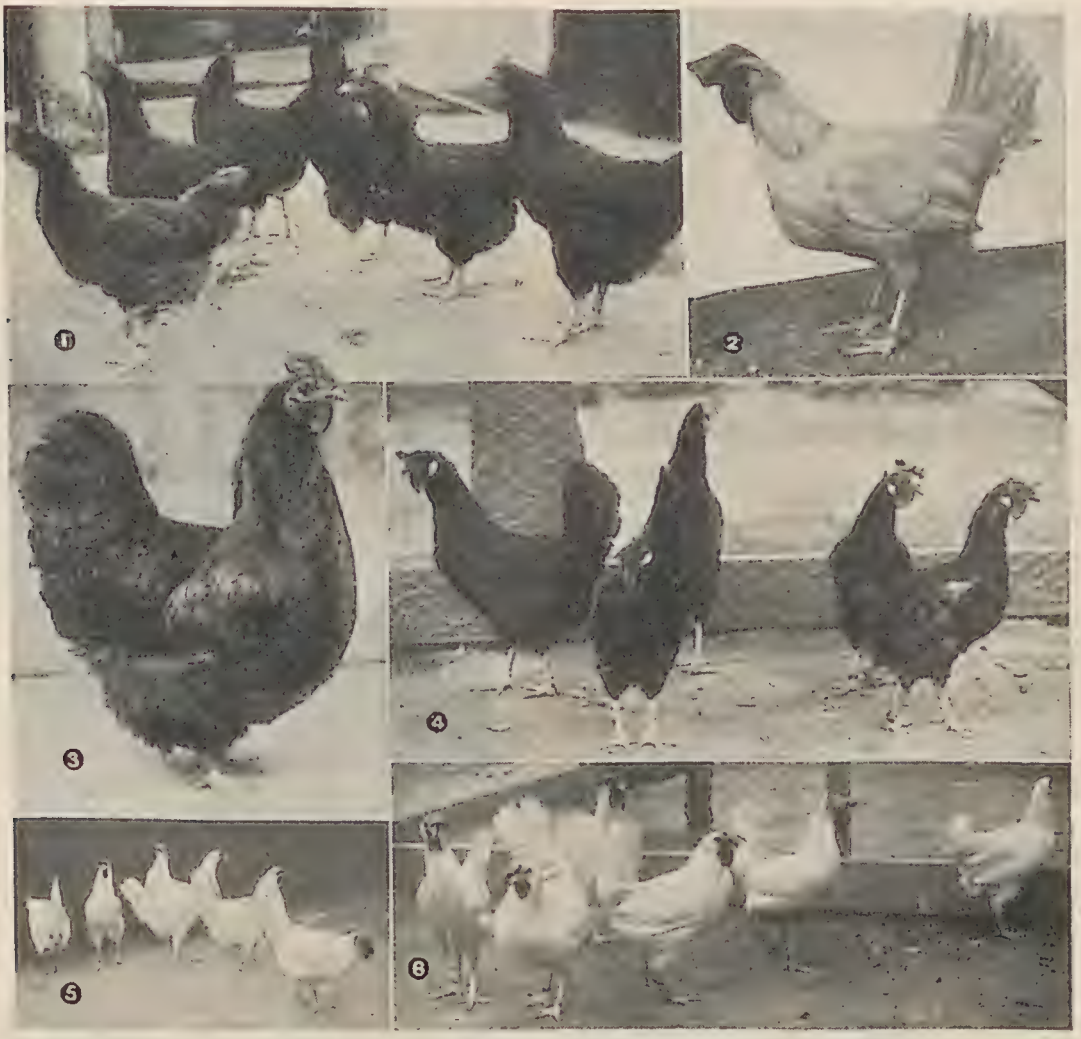
Ducks.—Team: M. G. Leech, 1928–29, Khaki Campbell, 1,840 eggs (all 1st grade). Single bird: M. G. Leech, 1928–29, Khaki Campbell, 339 eggs (all 1st grade).

In the competition just concluded, prize certificates and sashes were awarded for the greatest number of first-grade eggs laid. During

Mr. R. Hull's Andalusian which laid 211 eggs.

TABLE SHOWING MONTHLY LAYING RETURNS.

Month.	Light Breeds.						Heavy Breeds.					
	White Leghorns.			Other Light Breeds.			Australorps.			Other Heavy Breeds.		
	No. of Birds.	Total.	Average.	No. of Birds.	Total.	Average.	No. of Birds.	Total.	Average.	No. of Birds.	Total.	Average.
					Section A.							
April	228	2,808	12·21	18	120	6·66	66	1,022	15·48	12	109	9·08
May	224	3,224	13·21	18	193	10·72	66	1,246	18·87	12	115	9·58
June	224	2,915	13·02	18	208	11·55	66	1,106	16·76	12	138	11·5
July	223	3,580	16·05	18	254	14·11	66	1,259	19·07	12	207	17·25
August	223	4,598	20·61	18	312	17·33	66	1,347	20·49	12	223	18·58
September	222	4,756	21·42	18	323	17·94	65	1,320	20·30	12	232	19·33
October	222	4,718	21·25	17	340	20·00	63	1,281	20·33	12	183	15·25
November	220	4,420	20·09	17	252	14·82	63	1,185	18·80	12	165	13·75
December	219	4,182	19·10	17	298	17·52	63	1,098	17·42	12	168	14·00
January	214	4,031	18·83	17	204	12·00	62	931	15·17	12	152	12·66
February	213	3,573	16·76	17	214	12·58	62	960	15·48	12	139	11·58
					Section B.							
April	110	1,719	15·62	8	55	6·87	58	896	15·44	28	215	7·67
May	109	1,932	17·72	7	99	14·14	58	1,196	20·62	28	302	10·78
June	109	1,729	15·86	7	89	12·71	57	1,038	18·21	28	312	11·14
July	109	1,899	17·42	7	100	14·28	56	1,119	19·09	28	404	14·42
August	109	2,295	21·05	7	122	17·42	56	1,153	20·59	28	505	18·03
September	109	2,451	22·48	6	120	20·00	54	1,063	19·68	28	523	18·67
October	108	2,497	23·12	6	127	21·16	54	937	17·35	28	516	18·42
November	108	2,369	21·93	6	116	19·33	54	813	15·05	28	401	14·32
December	108	2,299	21·28	6	115	19·16	54	738	13·66	27	366	13·25
January	108	2,149	19·89	6	99	16·50	52	688	13·23	26	346	13·31
February	106	1,833	17·29	6	90	15·00	52	631	12·13	26	333	12·81



1. Mr. S. N. Lloyd's winning team of Rhode Island Reds (1002 eggs). 2. A White Leghorn, also owned by Mr. Lloyd (281 eggs). 3. Mr. W. A. Shevill's Australorp (286 eggs). 4. The Sorrento Poultry Farm's winning team of Black Leghorns (1013 eggs). 5. Winners of the Wet Mash section for White Leghorns (1407 eggs) (Mr. J. A. Stewart). 6. Mr. J. M. Sutherland's White Leghorn team, winners of the Dry Mash section with 1334 eggs.

the first two months of the competition a first-grade fowl's egg must have weighed not less than $1\frac{3}{4}$ oz., and thereafter not less than 2 oz. In the Burnley Egg-laying Competitions every egg is weighed and recorded to one-tenth of an ounce. This division of an ounce has been found to be most satisfactory, as the scale is easily and quickly read, and it greatly simplifies the clerical work involved. Commencing with this competition, it was also decided to weigh each bird at the commencement and conclusion of the competition, in order to ascertain the relationship between the weight of the birds and egg production. These records are available for examination by any competitor who can thus compare the performances of various birds, and, if he wishes, ascertain the weight of each of his birds and of every egg laid throughout the period of the competition.

In this year's competition Rhode Island Reds again proved to be popular. Although not as many as in the previous year, 30 birds of this breed were entered in Sections "A" and "B," and constituted sufficient entries to provide a special class in Section "B."

Although dry weather, above the average, was experienced during the first five months of the competition and a portion of the summer months, and considering that October was an exceedingly wet month, conditions throughout the 1937–38 test were generally favorable for egg production. During the months of June and July a larger number of frosts than usual occurred in succession. There was no excessive heat during the summer, with the exception of a few days, when three birds were lost through heat apoplexy.

There was a great improvement in the average number of eggs produced by the fowls compared with that of the last two years while a highly satisfactory increase was recorded in the average number of first-grade eggs, as can be seen from the following table :—

AVERAGE NUMBER OF EGGS LAID PER BIRD.

Competition (48 Weeks).	First Grade.	Underweight.	Total.
1935–36 ..	176·8	7·8	184·6
1936–37 ..	183·7	4·4	188·1
1937–38 ..	190·3	2·9	193·2

The following table setting out the percentages of first-grade eggs, underweight eggs, mortality, &c., during the past thirteen years is also of interest :—

SHOWING THE IMPROVEMENT IN PERCENTAGE OF FIRST-GRADE EGGS, 1925–26 TO 1937–38.

Year.	Percentage of First Grade Eggs.	Percentage of Underweight Eggs.	Average Number of Eggs per Bird.	Percentage Mortality.
	%	%	%	%
1925–26 (365 days)	79·8	20·2	206·3	5·4
1926–27 (48 weeks)	86·0	14·0	202·3	3·9
1927–28 ,,	88·4	11·6	197·8	4·2
1928–29 ,,	90·8	9·2	199·0	6·7
1929–30 ,,	89·9	10·1	187·3	4·3
1930–31 ,,	90·3	9·7	193·3	6·4
1931–32 ,,	92·6	7·4	195·2	5·1
1932–33 ,,	93·6	6·4	189·9	5·5
1933–34 ,,	93·5	6·5	185·1	7·7
1934–35 ,,	94·7	5·3	186·4	6·4
1935–36 ,,	95·8	4·2	184·6	8·9
1936–37 ,,	97·6	2·4	188·1	6·1
1937–38 ,,	98·5	1·5	193·2	6·6

It is most pleasing to be able to state that the extent of mortality among the competing birds in this competition, was again comparatively low, viz., 6·6 per cent., a fraction higher than last year when it was 6·1 per cent. It is in the interest of all poultry-keepers to improve the egg yield of their flocks and to reduce mortality, as, generally, the higher the egg production and the lower the mortality, the greater will be the revenue. Such considerations are of paramount importance, especially when the prices of food are high.

This White Leghorn, owned by Mr. T. L. Eastaugh, laid 297 first-grade eggs—the highest individual score in the competition.

The Awards.

The principal feature of the competition just concluded was the outstanding performance of a White Leghorn entered by Mr. T. L. Eastaugh. At the conclusion of the 48 weeks' test this bird laid a total of 299 eggs (two only were under the required weight), only ten eggs less than the number which entitles a bird to be retained for twelve months, when it is likely to break the existing record for that period.

TEAMS OF SIX.

In Section A, Class 1, White Leghorns, Wet Mash, Mr. J. A. Stewart won first prize with a team that laid 1,407 first-grade eggs—the highest score recorded in Section A. These birds were of a good utility type and vigorous quality, and the eggs laid were of a nice size and good in texture of shell. "Ruburina" (Mr. V. D. Wallington) was awarded second prize; his team

laid a total of 1,310 eggs. Mr. P. Lindsay followed closely for third prize with a team that laid 1,309 eggs. A bird in a team of White Leghorns entered in this Class by Mr. S. N. Lloyd laid 281 first-grade eggs. This bird was a good typical utility specimen of the breed, and laid the highest individual score in teams of light breeds, and the second highest total in all Classes of Section A.

In Class 2, White Leghorns, Dry Mash, first prize went to Mr. J. M. Sutherland, with a team that laid 1,334 first-grade eggs—the second highest score for light breeds, and the third highest number recorded in Section A. These birds were of a good vigorous quality, typical specimens of utility White Leghorns, and the eggs were good in size and texture of shell. Mr. L. Magnusson obtained second prize with 1,245 eggs, and the Sorrento Farm followed closely for third prize with 1,237 eggs. A bird in Mr. Sutherland's winning team laid 265 first-grade eggs, the greatest number laid by an individual bird in this Class.

In Class 3, All Light Breeds other than White Leghorns, first prize was awarded for a team of Black Leghorns owned by the Sorrento Farm. These birds laid 1,013 first-grade eggs. They laid particularly nice eggs of a good shape, colour and texture of shell. One bird in this team laid 230 first-grade eggs—the highest number recorded for an individual bird in this Class.

In Class 4, Australorps, Messrs. Aitken and Grenville won first prize with a team that laid a total of 1,348 first-grade eggs—the second highest score recorded in Section A. This was a good team, and they laid particularly well throughout the competition. Mr. W. A. Shevill was awarded second prize for a team that laid 1,219 eggs, and Mrs. D. Mason followed closely for third prize with 1,214 eggs. A bird in Mr. W. A. Shevill's team of Australorps, in this Class, laid 286 first-grade eggs. The total number of eggs laid by this bird, including thirteen eggs under the required weight, was 299, which is equal to the total laid by the highest individual bird in Section B. This bird was a typical Australorp, and put up a very good performance, having laid the highest score for an individual bird in Section A.

In Class 5, All Heavy Breeds other than Australorps, Mr. S. N. Lloyd was awarded first prize for a team of Rhode Island Reds. This team laid 1,002 first-grade eggs, all of which were of large size. One bird in this team laid 223 first-grade eggs—the highest number recorded for an individual bird in this Class.

STATEMENT SHOWING THE NUMBER OF EGGS LAID BY THE VARIOUS BREEDS IN THE COMPETITION, AND THE AVERAGE NUMBER OF EGGS LAID PER BIRD.

Breeds.	No. of Birds. After Allowing for Deaths.	Eggs Laid.			Average Number of Eggs Laid per Bird.		
		1st Grade.	Under-weight.	Total.	1st Grade.	Under-weight.	Total.
LIGHT BREEDS—WET MASH—							
White Leghorns	234	47,549	683	48,232	203·2	2·9	206·1
Brown Leghorns	14	2,038	42	2,080	145·6	3·0	148·6
Black Leghorns	8	1,302	52	1,354	162·7	6·5	169·2
Andalusians	2	416	..	416	208·0	..	208·0
TOTAL LIGHT BREEDS—WET MASH	258	51,305	777	52,082	198·9	3·0	201·9
LIGHT BREEDS—DRY MASH—							
White Leghorns	95	17,591	145	17,736	185·2	1·5	186·7
TOTAL LIGHT BREEDS—WET AND DRY MASH	353	68,896	922	69,818	195·2	2·6	197·8
HEAVY BREEDS—WET MASH—							
Australorps	119	22,558	509	23,067	189·6	4·3	193·9
Rhode Island Reds	30	4,777	22	4,799	159·2	·7	159·9
Light Sussex	6	917	49	966	152·8	8·2	161·0
Barnevelders	4	267	5	272	66·8	1·2	68·0
TOTAL HEAVY BREEDS	159	28,519	585	29,104	179·4	3·7	183·1
TOTAL ALL BREEDS—WET AND DRY MASH	512	97,415	1,507	98,922	190·3	2·9	193·2

Individual Birds.

In Section B, Class 1, White Leghorns, Wet Mash, first prize was won by Mr. T. L. Eastaugh with a bird that laid 297 first-grade eggs—the highest individual score in the competition. This was a high-class bird, very active, and particularly tight in feather. Mrs. E. Abikhair was awarded second prize with a total of 278 eggs—the second highest score in Section B, while Mr. A. R. Davey followed closely for third prize with a bird that laid 273 eggs. It is interesting to note that several birds in this Class finished remarkably close to one another.

In Class 2, White Leghorns, Dry Mash, first prize was won by "Caithness" (M. G. Skinner). This bird laid 274 first-grade eggs—the third highest total recorded in Section B. This bird was a good typical utility White Leghorn. Mr. G. E. Thomas followed closely for second prize with 268 eggs, and Mr. A. R. Davey for third prize with 259 eggs.

First place in Class 3, All Light Breeds other than White Leghorns, was awarded to an Andalusian, owned by Mr. Roy Hull, that laid 211 first-grade eggs, nine less than the number required to win a prize. This useful Andalusian did well, but arriving very young, did not commence laying until the third week in May. All eggs laid, however, were first grade. In Class 4, Australorps, first prize was won by Mr. C. E. Graham, with a bird that laid 272 first-grade eggs. This was a good score, the bird having laid consistently throughout the competition. Mrs. W. Savory followed closely for second prize with a total of 269 eggs, and Mr. O. Pearse for third prize, with a bird that laid 268 eggs of a nice colour. Another bird in this Class, owned by Mrs. W. Savory, laid 267 eggs, only one egg less than the total laid by the third prize bird.

Mr. H. R. Cropley obtained first place in the Class for All Heavy Breeds other than Australorps and Rhode Islands with a very fair type of utility Light Sussex. This bird laid 206 eggs, 205 of which were first grade but, unfortunately, this was fifteen less than the number required to qualify for a prize.

In the Class for Rhode Islands, which comprised all Rhode Island Reds, Mr. J. Chatts won first prize with a bird that laid 256 first-grade eggs. This bird was a good utility type and laid nice eggs. Second prize was secured by R. R. Christie and Son with a bird that laid 238 eggs, while Mr. W. Drinkwater obtained third prize with 227 eggs.

Mr. J. Chatts' Rhode Island Red (256 first-grade eggs).

Weights of Winning Birds.

The weights at the beginning and at the end of the competition of those birds laying the greatest number of eggs are as follows:—

—	Bird No.	Weights at April, 1937.	Weights at March, 1938.	First Grade Eggs.
		lb. oz.	lb. oz.	
Section "A"—Teams of Six Birds.				
Light Breeds.				
	133	4 8	5 12	235
	134	3 12	5 3	218
J. A. Stewart's White Leghorns (Pen 23)	135	4 8	5 8	231
	136	4 0	5 3	260
	137	4 4	5 0	250
	138	3 12	4 11	212
Heavy Breeds.				
	355	5 0	6 4	268
	356	4 11	6 8	243
Aitken and Grenville's Australorps (Pen 60)	357	5 8	6 2	188
	358	6 0	6 2	244
	359	4 10	7 7	246
	360	4 8	6 1	159
Section "B"—Individual Birds.				
Light Breeds.				
T. L. Eastaugh's White Leghorn	18	4 6	4 15	297
Heavy Breeds.				
C. E. Graham's Australorp	114	4 12	5 10	272

Cost of Feeding, &c.

The number of fowls in the competition at its beginning was 528, but 35 of these died. The total number of days these latter birds collectively were in the pens was 6,459, which is equal to approximately 19 birds having been there for the full 48 weeks. Therefore, the total number of birds in the competition for the whole period may be regarded as 512, and this is the figure that has been used in working out averages, &c.

The different kinds and quantities of the food fed to the birds during the currency of the competition were as follows :—Wheat, 19,410 lb. ; hulled oats, 3,864 lb. ; maize, 4,517 lb. ; bran, 10,384 lb. ; pollard, 17,012 lb. ; maize meal ; 160 lb. ; pea meal, 448 lb. ; meat-meal, 392 lb. ; dried whey, 672 lb. ; meat, 2,802 lb. ; onions, 245 lb. ; grit, 2,352 lb. ; charcoal, 168 lb ; dried butter-milk, 672 lb. ; salt, 168 lb.

The total number of eggs laid, including those underweight was 98,922, an average per bird of 193.2 for the 48 weeks.

The price realized for the eggs averaged a fraction over 1s. 3¾d. per dozen. The market value of the eggs averaged £1 1s. 2½d. per bird, and the cost of food averaged 9s. 6¾d. per bird, a fraction under 2½d. per week ; thus the profit over cost of food for the 48 weeks averaged 11s. 7¾d. per bird. The prices received for the eggs, however, are the net prices, exclusive of freight or commission charges, &c. Also, it must be remembered, that the eggs were laid by pullets in their first period of production, which were kept in single pens or in teams of six, the conditions being entirely different from those on commercial farms where birds of various ages are kept in large flocks.

The successful results achieved in the competition pens are due to good feeding and management and the high average production of eggs of good quality, size, shape, colour, and texture of shell, from birds of high quality and constitutional vigour. When birds of this description are returned to their owners they can be used to breed stock of the highest class. That there is a keen demand for birds of the right kind is shown by the very high prices that have been paid for the best stock entered in the Burnley Egg-Laying Competition. Owners of commercial poultry farms, by introducing birds of this description amongst their flocks, no doubt would greatly improve the average egg yield and reduce the percentage of mortality on the farm.

Competitors entering birds are advised to select only pullets bred from strong robust parents that have not suffered an illness of any description. It is only those birds bred with a high degree of constitutional vigour that can produce progeny which stand the strain of high egg production over a long period.

SECTION A.—TEAMS OF SIX BIRDS, TRAP-NESTED.

Pen No.	Name and Address.	Total Eggs.	Under-weight.	First Grade Eggs.
	Class 1.—White Leghorns—Wet Mash.			
	First Prize—Champion Certificate ; also Burnley Champion Sash.			
23	J. A. Stewart, Maldon-road, Castlemaine	1,416	9	1,407
	Second Prize—Government Certificate.			
22	"Ruburina" (V. D. Wallington), 6 Manning-street, Newtown, Geelong West	1,311	1	1,310
	Third Prize—Government Certificate.			
9	P. Lindsay, Murray-avenue, North Wonthaggi	1,309	..	1,309
	Class 2.—White Leghorns—Dry Mash.			
	First Prize—Champion Certificate ; also Third Prize—Burnley Sash.			
34	J. M. Sutherland, Fulton-road, Box Hill	1,337	3	1,334
	Second Prize—Government Certificate.			
35	L. Magnusson, Private Bag, Nathalia	1,246	1	1,245
	Third Prize—Government Certificate.			
36	Sorrento Farm, Campbell-road, Sorrento	1,240	3	1,237
	Class 3.—All Light Breeds other than White Leghorns—Wet Mash.			
	First Prize—Champion Certificate.			
46	Sorrento Farm, Campbell-road, Sorrento (Black Leghorns)	1,022	9	1,013
	Class 4.—Australorps—Wet Mash.			
	First Prize—Champion Certificate ; also Second Prize—Burnley Sash.			
60	Aitken and Grenville, Silver-street, Cheltenham, S.22	1,350	2	1,348
	Second Prize—Government Certificate.			
68	W. A. Shevill, 35 Bourke-street, Mentone, S.11	1,249	30	1,219
	Third Prize—Government Certificate.			
67	Mrs. D. Mason, Mt. Evelyn-road, Lilydale	1,216	2	1,214
	Class 5.—All Heavy Breeds other than Australorps—Wet Mash.			
	First Prize—Champion Certificate.			
47	S. N. Lloyd, Box 10, Frankston (Rhode Island Reds)	1,002	..	1,002

SECTION B.—INDIVIDUAL BIRDS, SINGLE TEST.

Pen No.	Name and Address.	Total Eggs.	Underweight.	First Grade Eggs.
	Class 1.—White Leghorns—Wet Mash.			
	First Prize—Champion Certificate; also Burnley Champion Sash.			
18	T. L. Eastaugh, Point Nepean-road, Highett, S.21	299	2	297
	Second Prize—Government Certificate; also Second Prize—Burnley Sash.			
1	E. Abikhair, 41 Wilfred-road, Ivanhoe, N.21	280	2	278
	Third Prize—Government Certificate.			
11	A. R. Davey, Edward-street, Greensborough	273	..	273
	Class 2.—White Leghorns—Dry Mash.			
	First Prize—Champion Certificate; also Third Prize—Burnley Sash.			
219	"Caithness" (M. G. Skinner), 75 Vincent-street, Sandringham, S.8	275	1	274
	Second Prize—Government Certificate.			
224	G. E. Thomas, "Rosanna," Chesterville-road, Cheltenham, S.22	275	7	268
	Third Prize—Government Certificate.			
197	A. R. Davey, Edward-street, Greensborough	263	4	259
	Class 4.—Australorps—Wet Mash.			
	First Prize—Champion Certificate.			
114	C. E. Graham, Portarlington	272	..	272
	Second Prize—Government Certificate.			
136	Mrs. W. Savory, 170 Prospect Hill-road, Canterbury, E.7	269	..	269
	Third Prize—Government Certificate.			
132	O. Pearse, "Etker," Box 33, Donald	268	..	268

Section B.—Individual Birds—*continued.*

Pen No.	Name and Address.	Total Eggs.	Underweight.	First Grade Eggs.
	Class 5.—Rhode Island Reds—Wet Mash.			
	First Prize—Champion Certificate.			
182	J. Chatts, Mujea Poultry Farm, White-street, Beaumaris, S.10	256	..	256
	Second Prize—Government Certificate.			
183	R. R. Christie and Son, "St. Elmo," Tucker-road, Bentleigh, S.E.14	238	..	238
	Third Prize—Government Certificate.			
192	W. Drinkwater, 6 Kennedy-street, Fairfield Park, N.20	229	2	227

SECTION A.—FOR THE GREATEST NUMBER OF FIRST GRADE EGGS LAID BY INDIVIDUAL BIRDS IN EACH CLASS OF SECTION A.

Pen No.	Name and Address.	Bird No.	Total Eggs.	Underweight.	First Grade Eggs.
	Class 1.—White Leghorns—Wet Mash.				
	First Prize—Champion Certificate.				
10	S. N. Lloyd, Box 10, Frankston	60	281	..	281
	Second Prize—Government Certificate.				
1	Aitken and Grenville, Silver-street, Cheltenham, S.22	5	274	..	274
	Equal Third Prize—Government Certificate.				
16	T. A. Pettigrove, 159 Hawdon-street, Heidelberg, N.22	95	263	..	263
	Equal Third Prize—Government Certificate.				
8	Mrs. O. M. Lett, 13 Coronation-street, Brighton, S.6	43	263	..	263

Messrs. Aitken and Grenville's winning team of Australorps (1,348 first-grade eggs).

A Light Sussex owned by Mr. H. R. Cropley (205 eggs).

Section A.—First Grade Eggs by Individual Birds— *continued.*

Pen No.	Name and Address.	Bird No.	Total Eggs.	Under-weight.	First Grade Eggs.
	Class 2.—White Leghorns—Dry Mash.				
	First Prize—Champion Certificate.				
34	J. M. Sutherland, Fulton-road, Box Hill	200	266	1	265
	Second Prize—Government Certificate.				
34	J. M. Sutherland, Fulton-road, Box Hill	203	260	..	260
	Third Prize—Government Certificate.				
32	S. N. Lloyd, Box 10, Frankston	191	260	1	259
	Class 3.—All Light Breeds other than White Leghorns—Wet Mash.				
	First Prize—Champion Certificate.				
46	Sorrento Farm, Campbell-road, Sorrento (Black Leghorn)	274	230	..	230
	Second Prize—Government Certificate.				
45	Carlella Poultry Farm (J. W. Stoneman), Campbell-street, Briar Hill (Brown Leghorn)	265	226	8	218
	Third Prize—Government Certificate.				
46	Sorrento Farm, Campbell-road, Sorrento (Black Leghorn)	272	212	..	212
	Class 4.—Australorps—Wet Mash.				
	First Prize—Champion Certificate.				
68	W. A. Shevill, 35 Bourke-street, Mentone, S.11	406	299	13	286

Section A.—First Grade Eggs by Individual birds— *continued.*

Pen No.	Name and Address.	Bird No.	Total Eggs.	Under-weight.	First Grade Eggs.
	Class 4.—*continued.*				
	Second Prize—Government Certificate.				
67	Mrs. D. Mason, Mount Evelyn-road, Lilydale	400	279	1	278
	Third Prize—Government Certificate.				
61	J. Anderson, "Kismet," North Castlemaine	362	270	..	270
	Class 5.—All Heavy Breeds other than Australorps—Wet Mash.				
	First Prize—Champion Certificate.				
47	S. N. Lloyd, Box 10, Frankston (Rhode Island Red)	279	223	..	223

SECTION A.—FIRST CLASS CERTIFICATES OF MERIT TO TEAMS IN CLASSES 1, 2, AND 4, WHICH LAID 1,200 FIRST GRADE EGGS, AND IN CLASSES 3 AND 5, WHICH LAID 1,000 FIRST GRADE EGGS.

Pen No.	Name and Address.	First Grade Eggs.
	Class 1.—White Leghorns—Wet Mash.	
16	T. A. Pettigrove, 159 Hawdon-street, Heidelberg, N.22	1,276
10	S. N. Lloyd, Box 10, Frankston ..	1,271
11	J. M. Sutherland, Fulton-road, Box Hill	1,228
2	F. W. Becker, 103 Clarence-street, Geelong West	1,226
8	Mrs. O. M. Lett, 13 Coronation-street, Brighton, S.6	1,217

FIRST CLASS CERTIFICATES OF MERIT TO INDIVIDUAL BIRDS IN CLASSES 1, 2, AND 4, WHICH LAID 220 FIRST GRADE EGGS, AND IN CLASSES 3 AND 5, WHICH LAID 200 FIRST GRADE EGGS.

Pen No.	Name and Address.	Bird No.	First Grade Eggs.
	Class 1.—White Leghorns—Wet Mash.		
23	J. A. Stewart, Maldon-road, Castlemaine	133	235
	,, ,, ,, ,,	135	231
	,, ,, ,, ,,	136	260
	,, ,, ,, ,,	137	250
22	"Ruburina (V. D. Wallington), 6 Manning-street, Newtown, Geelong West	127	246
	,, ,, ,, ,,	129	234
	,, ,, ,, ,,	130	243

First Class Certificates to Individual Birds for First Grade Eggs—*continued.*

Pen No.	Name and Address.	Bird No.	First Grade Eggs.
	Class 1.—*continued.*		
9	P. Lindsay, Murray-avenue, North Wonthaggi	49	237
	,, ,, ,, ,,	50	226
	,, ,, ,, ,,	52	245
	,, ,, ,, ,,	53	236
	,, ,, ,, ,,	54	227
16	T. A. Pettigrove, 159 Hawdon-street, Heidelberg, N.22	92	223
	,, ,, ,, ,,	96	261
10	S. N. Lloyd, Box 10, Frankston ..	57	247
	,, ,, ,, ,, ..	58	249
11	J. M. Sutherland, Fulton-road, Box Hill	62	257
	,, ,, ,, ,,	63	235
	,, ,, ,, ,,	64	230
2	F. W. Becker, 103 Clarence-street, Geelong West	8	259
	,, ,, ,, ,,	9	222
19	A Smith and Son, Terang ..	110	220
	,, ,, ,, ..	113	241
15	Northeast and Son, 40 Elster-avenue, Gardenvale, S.4	87	245
1	Aitken and Grenville, Silver-street, Cheltenham, S.22	1	221
7	H. I. Jolly, Nelson-road, Trafalgar	37	228
	,, ,, ,, ,,	38	247
14	L. Magnusson, Private Bag, Nathalia	80	244
	,, ,, ,, ,,	82	222
21	P. C. and E. Thomson, 142 Fyans-street, South Geelong	121	225
	,, ,, ,, ,,	124	221
	,, ,, ,, ,,	125	251
6	C. R. Fagg, 76 Maud-street, Geelong	31	241
	,, ,, ,, ,,	36	239
25	W. Vercoe, Bayswater	145	235
	,, ,, ,, ...	147	231
	,, ,, ,, ,, ...	150	222
17	Sorrento Farm, Campbell-road, Sorrento	98	226
	,, ,, ,, ,,	101	255
5	T. L. Eastaugh, Point Nepean-road, Highett, S.21	30	228
18	Maroo Poultry Farm (B. Prendergast), 30 Maroo-street, Oakleigh, S.E.12	104	233
	,, ,, ,, ,,	108	231
3	"Ibrox" (J. Brown), 30 Hopetoun-grove, Ivanhoe, N.21	13	233
	,, ,, ,, ,,	17	236
	,, ,, ,, ,,	18	246
27	W. McLister, "Yallambee," 176 Hall-street, Spotswood, W.14	160	234
12	K. McKenzie, 82 Clarence-street, Geelong West	68	253
26	Overport Stud Poultry Farm (S. Mentiplay), Box 68, Frankston	152	240
	,, ,, ,, ,,	153	244
	,, ,, ,, ,,	154	237
24	A. J. Hill, Sunraysia Poultry Farm, Greensborough	140	238
	,, ,, ,, ,,	141	249

First Class Certificates to Individual Birds for First Grade Eggs—*continued.*

Pen No.	Name and Address.	Bird No.	First Grade Eggs.
	Class 2.—White Leghorns—Dry Mash.		
34	J. M. Sutherland, Fulton-road, Box Hill	201	255
35	L. Magnusson, Private Bag, Nathalia	206	221
36	Sorrento Farm, Campbell-road, Sorrento	212	225
	,, ,, ,, ,,	214	241
	,, ,, ,, ,,	216	225
32	S. N. Lloyd, Box 10, Frankston ..	187	229
	,, ,, ,, ,,	192	227
40	A. J. Hill, Sunraysia Poultry Farm, Greensborough	235	235
	,, ,, ,, ,,	237	246
42	"Ruburina" (V. D. Wallington), 6 Manning-street, Newtown, Geelong West	252	243
37	"Caithness" (M. G. Skinner), 75 Vincent-street, Sandringham, S.8	219	241
	Class 4.—Australorps—Wet Mash.		
60	Aitken and Grenville, Silver-street, Cheltenham, S.22	355	268
	,, ,, ,, ,,	356	243
	,, ,, ,, ,,	358	244
	,, ,, ,, ,,	359	246
68	W. A. Shevill, 35 Bourke-street, Mentone, S.11	407	260
	,, ,, ,, ,,	408	225
61	J. Anderson, "Kismet," North Castlemaine	361	224
	,, ,, ,, ,,	364	255
70	"Renwil" (W. B. Torrens), 171 Cape-street, Heidelberg, N.22	420	256
65	Belvedere Poultry Farm (E. W. Lacy), Fern Tree, via Hobart, Tasmania	386	258
	,, ,, ,, ,,	390	261
63	T. L. Eastaugh, Point Nepean-road, Highett, S.21	373	222
69	J. A. Stewart, Maldon-road, Castlemaine	411	260
64	C. H. Harvey, Pakenham South ..	379	239
62	Corbett Bros., Noel-avenue, Macleod	369	222
66	S. N. Lloyd, Box 10, Frankston ..	394	255

SECTION B.—FIRST CLASS CERTIFICATES OF MERIT TO HENS IN CLASSES 1, 2, AND 4, WHICH LAID 240 FIRST GRADE EGGS, AND IN CLASSES 3 AND 5, WHICH LAID 220 FIRST GRADE EGGS.

Pen No.	Name and Address.	First Grade Eggs.
	Class 1.—White Leghorns—Wet Mash.	
20	Lawn Garrard (C. Garrard), 4 Cooper-street, Preston, N.18	268
59	A. Siede and Sons, Point Nepean-road, Highett, S.21	265
53	Maroo Poultry Farm (B. Prendergast), 30 Maroo-street, Oakleigh, S.E.12	264
17	T. L. Eastaugh, Point Nepean-road, Highett, S.21	262

Section B.—continued.

Pen No.	Name and Address.	First Grade Eggs.
	Class 1—*continued.*	
47	J. E. Cox, 72 Clarendon-street, Thornbury, N.17	262
74	J. H. Wernli, Alpina Stud Farm, Wilson-street, Cheltenham, S.22	260
14	A. T. Dent, "Ridgeway," Edward-street, Greensborough	260
12	A. R. Davey, Edward-street, Greensborough	258
61	A. Siede and Son, Point Nepean-road, Highett, S.21	258
32	C. and D. McLauchlan, 144 Through-road, Burwood, E.13	258
40	A. May (W. J. May), Howlett-road, Tally Ho	257
69	"Ruburina" (V. D. Wallington), 6 Manning-street, Newtown, Geelong West	256
13	A. T. Dent, "Ridgeway," Edward-street, Greensborough	251
67	Mrs. J. Thomas, "Hillside," Outtrim ..	251
46	G. McDonnell, 46 Childers-street, Kew, E.4	247
19	"Lawn Garrard" (C. Garrard), 48 Cooper-street, Preston, N.18	245
71	Marywood Farm (A. Waugh), Banks-street, Kangaroo Flat	245
6	A. E. Bennett, 40 Simpsons-road, Box Hill, E.11	244

Section B—*continued.*

Pen No.	Name and Address.	First Grade Eggs.
	Class 1.—*continued.*	
34	J. R. Maddison, Red Cliffs P.O. ..	243
68	Mrs. J. Thomas, "Hillside," Outtrim ..	243
70	"Ruburina" (V. D. Wallington), 6 Manning-street, Newtown, Geelong West	240
	Class 2.—White Leghorns—Dry Mash.	
204	H. I. Jolly, Nelson-road, Trafalgar ..	250
213	T. A. Pettigrove, 159 Hawdon-street, Heidelberg, N.22	249
	Class 4.—Australorps—Wet Mash.	
135	Mrs. W. Savory, 170 Prospect Hill-road, Canterbury, E.7	267
147	D. V. Tresise, Serpentine	259
98	R. R. Christie and Son, "St. Elmo," Tucker-road, Bentleigh, S.E.14	256
123	H. R. McChesney, Hereford-road, Mount Evelyn	245
107	W. Drinkwater, 6 Kennedy-street, Fairfield Park	242
137	Scott Bros., Bannockburn-road, Lower Plenty	240

Irrigation at Boort *(Continued from page 174.)*

standard of former years, as the season had been unfavorable as regards rainfall and temperature.

Mr. J. W. Watson, of Appin South, gained first place with a crop of saccaline which was sown on 23rd November on well-worked heavy soil with 12 lb. of seed and 1 bag of superphosphate per acre. Three waterings had been applied. There were a few thin patches, but otherwise the uniformity of growth was good, and there were relatively few weeds. The plants had stooled out exceptionally well, and were in fresh green condition. Some slight damage had been effected by aphis. It was intended to cut the crop when mature, and feed out. Cutting would commence in April, and be carried on gradually till the end of June.

Mr. J. B. Mann gained second place with a crop of Sudan grass sown in the middle of December with 15 lb. of seed and 160 lb. of superphosphate per acre. The third watering was being applied on the day of judging. The crop was fairly even and fairly free from weeds, although not very high. It was intended to feed the crop off with sheep.

Mr. L. J. Sutton had a good crop of Japanese millet, which was sown in the third week of December with 10 lb. of seed and 60 lb. of superphosphate per acre. The crop had had two waterings, and on the day of judging was ready for a third irrigation. A variety of water weeds was present, but this was the result of the area having originally been a lignum swamp. Mr. Sutton had encountered great difficulty in the grading of the area, and the result was very creditable. The area was being grazed by sheep at judging.

Throughout the judging keen interest was taken in the methods adopted for successful irrigation practice. At various points the judge was met by parties of farmers desiring information. While on the properties of Messrs. J. D. Fyfe and L. E. Weaver, about 00 people representative of a very wide area attended, and the opportunity was taken to give several short talks on various factors governing successful establishment and maintenance of permanent crops under irrigation.

Sultana Processing

Report Issued by the Fruit Processing Committee *

THE prime object of this article is to indicate the latest recommendations on sultana drying issued by the Dried Fruits Processing Committee, and based mainly on the research work of the Viticultural Research Station, Merbein, in conjunction with packers, and a committee of growers. Over 200 tons were treated in various trials, and although the recommendations do not include any radical innovations, they stress the value of the cold dip, factory prepared emulsions, and the superior storage properties of cold dipped fruit. While fruit, prepared by other means, may look as well when delivered to the packing shed, the true test point is its attractiveness when the consumer takes delivery, perhaps months later.

The proverb that no business can remain stationary is well illustrated by the past history of sultana growing in Australia. Districts not climatically perfect have been abandoned, trays have given way to racks, sun to shade-drying, dips have constantly changed, and the improvement in the grading, packing, and preservation of the fruit has been remarkable.

Possibly because of the notable success of the Australian industry, sultana production is

* The members of the Fruit Processing Committee are:—Mr. W. R. Jewell, Agricultural Research Chemist, Department of Agriculture, Victoria (Chairman); Mr. A. Y. Lyon, Commonwealth Research Station, Merbein; Mr. C. G. Savage, Director of Fruit Culture, New South Wales; Mr. A. G. Strickland, Chief Horticultural Officer, South Australia; Mr. E. S. West, Research Station, Griffith, New South Wales; Mr. D. G. Quinn, Viticulturist, Victoria (Secretary).

receiving greater attention in other parts of the world, and as world markets and circumstances are ever changing, it should be the aim of every individual grower to produce the most attractive article possible from the fruit he handles, bearing in mind that the control of the output of any industry is eventually limited by the demand of the consumer.

The expansion of the Australian sultana industry to its present size is due largely to the influence of the British Preferential Tariff, but if the industry is to continue to expand, the Australian market must be encouraged to absorb proportionally more of the output, and the demand of the English market must be held and encouraged by a continuation of the well-known high standard quality of the fruit.

Drying sultanas in the Mildura District.

For the purpose of comparison, samples of dried fruit from foreign countries are frequently sent out and stored alongside first-grade cold dipped Australian fruit, and at the present time such Australian fruit compares particularly well with the fruit with which it has to compete on English markets. Factory processing experiments, with the object of still further improving the colour of the Australian pack are in progress, and may be adopted in the near future.

The following notes on the cold dip for sultanas have been prepared by the Dried Fruits Processing Committee for dissemination throughout the Murray irrigation areas to encourage uniformity of treatment of fruit in the field.

Oil Emulsions.

The introduction of fine proprietary emulsions, in place of home-made emulsions prepared from olive oil on the growers' premises, has simplified the preparation, and the use of the cold dip. The chief advantages are that proprietary emulsions are more uniform and more stable. They are much easier and safer to use, because in the preparation of the dip the grower is less dependent on his judgment. In reference to quality, there is usually no noticeable difference in grade, if home-made emulsions are made with good quality olive oil.

Preparation of Cold Dip.

The cold dip is a solution of potassium carbonate (potash) to which an emulsion of olive oil has been added. The usual concentration is 1 lb. of potassium carbonate to 2 gallons of water. The proprietary emulsions on the market last year were used at a strength of 4 pints of emulsion to 50 gallons of potash solution. This gave similar results, in drying rate and quality, to the home-made emulsions containing 1½ pints of oil. The finely divided proprietary emulsions have been available for a few years only, and are still in the transition stage. Variation in the principal ingredients —oil, emulsifying agents, and wetting agents —may in the future be accompanied by altered recommendations in regard to the quantity incorporated in the dip. The use of the prepared emulsions is generally favoured in the "cold dip" districts, and they represent a very useful refinement in dipping practice.

Concentration of Potash.

Reduced quantities of potash are favoured by some growers. The full strength (1 lb. to 2 gallons) usually results in slight burning at the points of the berries. A reduction to 1 lb. to 3 gallons prevents most of this burning. The lower concentration reduces the drying rate, and is recommended only in cases of ample rack space. If the growers' circumstances are such that a "hold-up" is likely while awaiting rack space, the full strength potash, accompanied by spraying in fine weather, is useful in securing quicker drying. Under normal circumstances, with ample rack space, spraying is undesirable

unless the fruit has been affected by rain. Otherwise it tends to darken the fruit.

Most of the objections to cold dip are based on its slower drying rate in good drying weather as compared with the mixed dip. In wet or humid weather, the drying rate is retarded in all cases, *but to a lesser extent if the grapes have been cold-dipped.*

Finishing-off Sultanas.

When finishing off sultanas after cold dip, the fruit should be well dried on removal from the rack, in order to avoid blobbing of soft berries. Removal from the rack is best carried out in early morning, and the fruit needs a full day in the sun before washing. Washing should be carried out in the morning after one day's exposure in good weather. Thin spreading as soon as possible after washing is essential. Where oil is incorporated in the wash, an improvement in grade frequently results. Two pints of proprietary emulsion, or 1½ pints of approved quality "white oil," with ½ to 1 lb. of potash per 50 gallons of water, makes a satisfactory wash.

Comparison of Quality.

In the grade of fruit produced, and in keeping qualities, the cold dip has consistently proved superior to other dips in all comparisons during the last ten years. The mixed dip has been favoured in some districts, and by some growers, because it is cheaper, dries more quickly in normal dry weather, and does not require so much care in bleaching and "finishing-off."

Keeping Qualities.

Various storage trials have shown that fruit from the mixed dip darkens much more than that from the cold dip. *For this reason, cold dipped and mixed dipped fruit should not be blended.* The fruit may appear similar at the time of packing, but subsequently the mixed-dip portion will darken, giving an undesirable blend of light and dark berries. For the cold dip particularly, washing and ample exposure to the sun on hessians are absolutely necessary after removal from the rack. Otherwise an undesirable green tinge and change of colour after packing may be featured.

Recommended Procedure for the Cold Dip.

(For preparation in a stock pot or direct in the dip tank.)

1. Prepare the potassium carbonate solution at a concentration of 1 lb. of potash to 2 gallons of water. (See note above on lower concentrations.)

2. Add the prepared emulsions at recommended strength.

3. The period of immersion in practice varies from two to four minutes, according to the effects of the dip on the grapes, the concentration, and the temperature. The period of immersion may be further decreased by special wetting agents.

4. Make all necessary additions to the dip tank at similar strength to the dip prepared as above.

5. Thin spreading, thorough drying on the rack and complete finishing-off on hessians are essential for best results.

6. In districts where oil (paraffin) is subsequently added in the packing house, no oil is necessary in the wash.

Artificial Fertilizer Inspections

Report for 1937

By W. C. Robertson, Chemist.

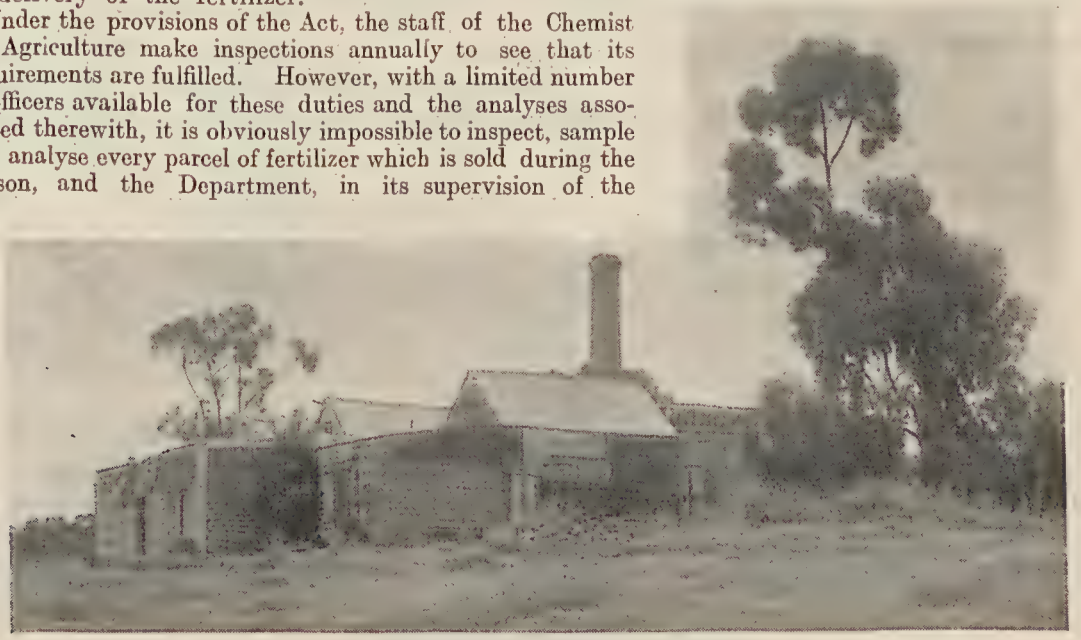
ALTHOUGH a Fertilizers Act has been in operation in Victoria for more than 30 years, infringements of the legislation occur periodically, and the past season proved no exception. The main clauses in the Act deal directly with the quality of the fertilizers on the market. A brand must be registered with the Director of Agriculture each year, or before any of the fertilizer is sold.

An application for brand registration must be accompanied by a statement showing the guaranteed analysis and the retail price per ton. Should these details prove unsatisfactory the brand is refused registration. All bags containing artificial fertilizer, the contents of which weigh more than 56 lb., must be branded with the registered brand, and a label, on which the analysis of the fertilizer and the net weight are stated, must be affixed to each bag. An invoice certificate or warranty must be handed to the purchaser prior to delivery of the fertilizer.

Under the provisions of the Act, the staff of the Chemist for Agriculture make inspections annually to see that its requirements are fulfilled. However, with a limited number of officers available for these duties and the analyses associated therewith, it is obviously impossible to inspect, sample and analyse every parcel of fertilizer which is sold during the season, and the Department, in its supervision of the quality of the artificial fertilizers which are sold, seeks the assistance of the farmer.

To illustrate the value of this assistance and co-operation, brief details are given of the single instance of a prosecution under the Act during 1937. A partnership in a small way launched itself into the fertilizer trade. In the beginning the trade consisted solely of supplying the home gardener with small parcels not exceeding 56 lb. in weight. In these sales the Act does not apply. Later the sales extended to the man on the land.

A well-known floriculturist and market gardener received a visit from a representative of the firm, and was persuaded to buy a small parcel of the high-priced fertilizer. On delivery it was found that the bags containing the fertilizer did not have the labels affixed as required by the Act. The farmer becoming suspicious refused to complete the sale unless the certifying labels were affixed to the bags.



A small bonedust mill in the country.

RESULTS OF ANALYSIS OF SAMPLES OF ARTIFICIAL FERTILIZERS COLLECTED IN VICTORIA DURING THE 1937 SEASON UNDER THE PROVISIONS OF THE FERTILIZERS ACT 1928, No. 3680.

Bottle Label No.	District in which Sample was Obtained.	Brand and Description of Fertilizer.	Analysis as Guaranteed by Manufacturer or Found by Chemist.	Nitrogen.			Phosphoric Acid.				Potash as Sulphate.	Manufacturer or Importer.
				As Ammonia.	As Blood and Bone.	Total.	As Water Soluble.	As Citrate Soluble.	As Citrate Insoluble.	Total.		
				%	%	%	%	%	%	%	%	
1894	Metropolitan	Sickle Market Garden Manure	Guaranteed	1·70	1·50	3·20	10·30	2·40	4·20	16·90	2·42	Commonwealth Fertilizers and Chemicals Ltd., 65 William-street, Melbourne
			Found ..	1·98	1·29	3·27	10·17	2·03	5·44	17·64	3·00	
1900	,,	Dundas' Blood and Bone	Guaranteed	..	4·50	4·50	..	7·14	13·61	20·75	..	J. A. Dundas, Dynon-road, Footscray
			Found ..	..	5·65	5·65	..	6·58	10·18	16·76	..	
1902	,,	A.N.A. Surprise Animal Fertilizer	Guaranteed	..	5·00	5·00	..	4·00	10·00	14·00	..	G. W. Pennell, Burke-street, Braybrook
			Found ..	..	5·53	5·53	..	5·85	9·41	15·26	..	
1904	Cheltenham	Pridham's Blood and Bone	Guaranteed	..	5·40	5·40	..	8·50	5·50	14·00	..	W. Pridham Pty. Ltd., Evans-street, Braybrook
			Found ..	..	5·16	5·16	..	5·77	8·48	14·25	..	
1903	Metropolitan	Brooklyn Blood and Bone. T.B. and S. in diamond	Guaranteed	..	6·00	6·00	..	6·00	6·00	12·00	..	Thos. Borthwick and Sons (Australasia) Ltd., 84 William-street, Melbourne
			Found ..	..	6·33	6·33	..	6·20	6·90	13·10	..	
1905	Cheltenham	Alba Castor Meal	Guaranteed	..	..	4·50 (as Castor meal)	..	..	2·25	2·25	0·75	Lycett Pty. Ltd., Normanby-road, Montague
			Found ..	..	..	4·65	..	..	2·50	2·50	not estimated	
1906*	,,	Organite Mixed Manure	Guaranteed	1·00	4·50 (as leather)	5·50	3·00	..	..	3·00	..	Organite Pty. Ltd., 450 Smith-street, Collingwood
			Found ..	2·40	3·24	5·64	3·71	..	..	3·71	..	
1907	,,	W. and M. in circle Blood and Bone	Guaranteed	..	5·00	5·00	..	4·50	7·50	12·00	..	Western and Murray Co-operative Bacon and Meat Packing Co. Ltd., 522 Flinders-lane, Melbourne
			Found ..	..	4·70	4·70	..	4·87	6·89	11·76	..	
1909	Moorabbin	Brooklyn Blood and Bone. T.B. and S. in diamond	Guaranteed	..	6·00	6·00	..	6·00	6·00	12·00	..	Thos. Borthwick and Sons (Australasia) Ltd., 84 William-street, Melbourne
			Found ..	..	6·23	6·23	..	6·11	7·75	13·86	..	
28	Merbein ..	Pivot Superphosphate	Guaranteed	..	..	..	20·50	0·50	1·00	22·00	..	Phosphate Co-operative Co. of Australia Ltd., 447 Lt. Collins-street, Melbourne
			Found ..	..	..	..	21·00	0·54	1·73	23·27	..	
30	Redcliffs ..	Cresco Superphosphate	Guaranteed	..	..	..	20·50	0·50	1·00	22·00	..	Cresco Fertilizers Ltd., Geelong
			Found ..	..	..	..	20·67	0·53	1·70	22·90	..	
31	,,	F.M.F. in diamond Blood and Bone A.B.	Guaranteed	..	5·50	5·50	..	8·50	5·50	14·00	..	F. F. Macdermott Pty. Ltd., 54 Market-street, Melbourne
			Found ..	..	6·15	6·15	..	6·95	7·30	14·25	..	
1735	,,	Cresco Mixed Manure No. 1	Guaranteed	1·00	1·40	2·40	11·25	2·00	4·50	17·75	5·00	Cresco Fertilizers Ltd., Geelong
			Found ..	1·12	1·88	3·00	11·47	3·10	2·48	17·05	5·91	
1736	,,	A.N.A. Surprise Animal Fertilizer	Guaranteed	..	5·00	5·00	..	4·00	10·00	14·00	..	G. W. Pennell, Burke-street, Braybrook
			Found ..	..	4·91	4·91	..	7·30	8·20	15·50	..	
1737	Irymple ..	Dundas' Blood and Bone	Guaranteed	..	4·50	4·50	..	7·14	13·61	20·75	..	J. A. Dundas, Dynon-road, Footscray
			Found ..	..	5·06	5·06	..	8·44	10·47	18·91	..	
1912	Mildura ..	M.G. Co. in diamond Sulphate of Ammonia	Guaranteed	20·59	..	20·59	..	..	..	..	..	The Metropolitan Gas Co., 196 Flinders-street, Melbourne
			Found ..	20·55	..	20·55	..	..	..	..	..	
1914	,,	Pannifex Animal Fertilizer No. 4	Guaranteed	..	6·00	6·00	..	5·00	7·00	12·00	..	H. C. Pannifex and Co. Pty. Ltd., 4 Dudley-street, Melbourne
			Found ..	..	5·52	5·52	..	5·63	8·16	13·79	..	
1917	Irymple ..	Imperial in diamond Blood and Bone	Guaranteed	..	5·00	5·00	..	5·00	11·00	16·00	..	W. Angliss and Co. (Aust.) Pty. Ltd., 42 Bourke-street, Melbourne
			Found ..	..	4·09	4·09	..	9·62	10·51	20·13	..	
1918	Redcliffs ..	Sickle in diamond Market Garden Manure	Guaranteed	1·70	1·50	3·20	10·30	2·40	4·20	16·90	2·42	Commonwealth Fertilizers and Chemicals Ltd., 65 William-street, Melbourne.
			Found ..	2·12	1·46	3·58	11·81	2·67	2·96	17·44	2·68	

* This fertilizer is now off the market.

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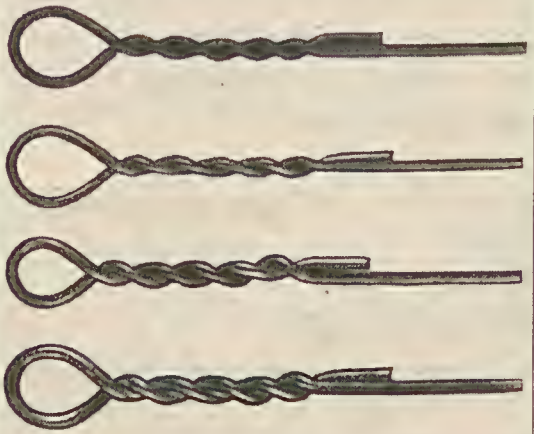

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RESULTS OF ANALYSIS OF SAMPLES OF ARTIFICIAL FERTILIZERS COLLECTED IN VICTORIA DURING THE 1937 SEASON UNDER THE PROVISIONS OF THE FERTILIZERS ACT 1928, No. 3680—*continued.*

Bottle Label No.	District in which Sample was Obtained.	Brand and Description of Fertilizer.	Analysis as Guaranteed by Manufacturer or Found by Chemist.	Nitrogen.			Phosphoric Acid.				Potash as Sulphate.	Manufacturer or Importer.
				As Ammonia.	As Blood and Bone.	Total.	As Water Soluble.	As Citrate Soluble.	As Citrate Insoluble.	Total.		
				%	%	%	%	%	%	%	%	
1921	Irymple ..	Pannifex No. 4 Animal Fertilizer	Guaranteed	..	6·00	6·00	..	5·00	7·00	12·00	..	H. C. Pannifex and Co. Pty. Ltd., 4 Dudley-street, Melbourne
			Found ..	..	5·73	5·73	..	5·33	8·03	13·36	..	
1922	Braybrook	Pridham's Blood and Bone	Guaranteed	..	5·40	5·40	..	8·50	5·50	14·00	..	W. Pridham Pty. Ltd., Evans-street, Braybrook
			Found ..	..	5·00	5·00	..	9·22	7·78	17·00	..	
1924	,,	A.N.A. Surprise Animal Fertilizer	Guaranteed	..	5·00	5·00	..	4·00	10·00	14·00	..	G. W. Pennell, Burke-street, Braybrook
			Found ..	..	5·00	5·00	..	8·04	7·96	15·00	..	
1925†	Moorabbin	Growell Fertilizer (not registered)	Guaranteed	not guaranteed		12·00	not guaranteed			14·00	9·00	Growell Fertilizer Co., 340 Lt. Collins-street, Melbourne
			Found ..	0·53	2·16	2·69	9·95	1·15	4·36	15·46	1·10	

† Prosecution.

Subsequently this was done, and the fertilizer paid for at a rate more than twice its value.

Later, the purchaser became dissatisfied, and communicated with the Department with the result that the purchase price was returned, the fertilizer carted back to the factory, and the manufacturers prosecuted and penalized for serious violations of the Act. It is necessary to add that the fertilizer did not have a brand registered under the Act, and it was sold under a high and impossible guarantee.

Because of the farmer's assistance in this case the operations of the firm ceased almost as soon as they had begun, and very little harm was done, but without the purchaser's co-operation many tons of the fertilizer might have been sold before the officers of the Department became aware of the firm's existence, and in any case only one prosecution would ensue.

The users of artificial fertilizer in all branches of agriculture should buy only those with registered brands (a list of registered brands appears annually in the January issue of this Journal), and special attention should be paid to the delivery to see that correct labels are attached to the bags, and that the invoice certificate agrees with the certifying figures on the label.

During the year 1937, inspections under the Act resulted in 23 samples being collected. The accompanying table gives the results of the analyses of these samples together with the analyses guaranteed. With one exception all the samples equalled or exceeded the quality guaranteed, but the exception proved to be a very serious infringement of the Act, and a successful prosecution followed.

Superphosphate.

Only two samples of superphosphate were collected last year. The manufacture of superphosphate is so efficiently controlled in Victoria that, in more than 30 years, annual inspections under this Act have not at any time disclosed a parcel of ordinary superphosphate which was found on analysis to infringe the Act, and consequently only occasional inspections of this fertilizer are regarded as necessary.

The average and guaranteed analyses of the two samples compare as follows:—

—	Water Soluble Phosphoric Acid.	Citrate Soluble Phosphoric Acid.	Citrate Insoluble Phosphoric Acid.	Total Phosphoric Acid.	Calculated Value per Ton.
	%	%	%	%	£ s. d.
Average analysis as found ..	20·84	·54	1·71	23·08	3 18 1
Average analysis as guaranteed	20·50	·50	1·00	22·00	3 16 0

The excess value is equal to Two shillings and a penny per ton, or a discount of 2.7 per cent. on every ton of superphosphate which was purchased at the registered price.

The statistics for the year in connexion with superphosphate are interesting. The estimated tonnage used on crops was 160,000, while the top-dressing of pastures required 227,000 tons. It is estimated that the average application per acre of pasture was 1 cwt. 15 lb., per acre of cereals 56 lb., and per acre of crops under intense culture 2½ cwt..

Sulphate of Ammonia.

Sulphate of ammonia is another fertilizer which is always even in quality, and rarely does it vary from the average guaranteed. The single sample which was collected gave the following figures:—

—	Percentage.	Calculated Value per Ton.
		£ s. d.
Nitrogen found	20·55	11 12 11
Nitrogen guaranteed ..	20·59	11 13 4

Complete Fertilizers.

A complete fertilizer is one containing the three plant foods, viz., nitrogen, phosphoric acid, and potash *in appreciable amounts.* They are occasionally and erroneously referred to as "mixed" fertilizers. A "mixed" fertilizer is a mixture of two or more fertilizers, and may not contain all the essential plant foods—in other words a "mixed" fertilizer may not be complete in its plant food content.

A rear view of the country bone mill with raw material in the foreground.

Three samples of complete manures were collected during the season, and the figures showing a comparison of the average analysis with the average guarantee, together with the calculated values are of interest.

—	Nitrogen.		Phosphoric Acid.				Potash as Sulphate.
	As Ammonia.	As Organic.	Water Soluble.	Citrate Soluble.	Citrate Insoluble.	Total.	
	%	%	%	%	%	%	%
Average analysis found ..	1·74	1·54	11·15	2·60	3·63	17·38	3·86
Average analysis guaranteed ..	1·47	1·47	10·62	2·27	4·30	17·19	3·28

The average calculated value found was £6 15s. 2d., while that guaranteed was £6 6s. 4d. per ton, *an excess value of 8s. 10d. per ton.*

Blood and Bone.

Inspections produced fourteen samples of blood and bone, a fertilizer in the manufacture of which the composition is not so readily controlled. However, the comparative figures of the average analysis as found with the average analysis guaranteed which are stated below are entirely satisfactory:—

—	Nitrogen.	Phosphoric Acid.			Calculated Value per Ton.
		Citrate soluble.	Citrate Insoluble.	Total.	
	%	%	%	%	£ s. d.
Average analysis as found ..	5·36	7·16	8·40	15·56	7 18 2
Average analysis as guaranteed	5·31	5·96	8·44	14·40	7 12 5

The excess value is Five shillings and nine pence per ton.

Perhaps the most satisfactory feature of the year's work is the fact that the manufacturers have kept the quality of the fertilizers sold well above the registered guarantees. Considering the excess values it should be remembered that the allowances permitted by the legislation are appreciable, and the fertilizer sold may be shillings under the guaranteed value without the Act being infringed.

Export Lamb Competitions

MR. R. H. Heywood, Executive Officer in London of the Australian Meat Board, in a report to the Board states that judging in the second of the series of Competitions was carried out on 25th January last and attracted considerable attention, being witnessed by respresentatives of most of the important firms in the trade and others interested.

The lambs, continues Mr. Heywood's report, may be described as brighter in appearance but, with the exception of the leading pens, were not up to the standard of quality of the previous Competition. Attention should be drawn to the fact that the methods of branding and marking of the entries left much to be desired. In some cases the printing on the wraps and tags did not correspond and in other cases there was no printing on the tags.

The entries which gained the highest number of points were those of Mr. E. C. Henry, Nos. 9 and 12, Victoria. Both Mr. Henry's pens were outstanding and he is to be congratulated. The lambs were considered ideal specimens, equal to the best New Zealand—compact and uniform, with that silky ripe appearance which satisfies the trained eye and decides quality.

Other entries from Victoria, with one exception (Entry No. 2, which consisted of well-made and very good quality lambs but with a somewhat "muttony" appearance) were similarly attractive, and the three entries from the State in Class II. of the Competition were satisfactory and may be described as of a good commercial type for the London trade.

Western Australian lambs again gave rise to most favourable comment on account of their compact and shapely appearance. They are of the type of lamb very well suited to the best lamb trade of the United Kingdom.

New South Wales was represented by two good pens which were very useful lambs indeed, and Mr. H. S. Henley's pens, Nos. 1 and 4, shared with Mr. H. H. Shillabeer's pens, Nos. 32 and 33 (South Australia) for second place in this Competition. Mr. R. E. Golder, Nos. 34 and 35 (South Australia) were third, but the South Australian entries were patchy. They lacked the necessary finish in the majority of cases, the legs in particular not having the characteristic "Down" finish and falling away inside. The South Australian entries gave the impression of lambs that had seen their best and had started to go back.

The position of the Competition now is as follows:—

Mr. E. C. Henry, Victoria ..	.. 1st
Mr. F. Prentice, Queensland ..	.. 2nd
Mr. B. D. Bothe, West Australia	.. 3rd
Mr. T. Ridgway, South Australia	.. 4th

In Class II. the only entrants who have so far submitted two pens are Messrs. E. and B. Hawkins, of Victoria. In Class I. there are only three points between the three leaders and, it is interesting to note, Mr. Prentice's first pen scored four more points than Mr. Henry's first.

A year or so ago, by the way, a lamb bred by Mr. Henry was retained on Smithfield Market for several days and was admired by a very considerable number of experts who saw it. The consensus of opinion appears to have been that as a model carcase it was unique.

Generally, the standard of the Competition was a high one, and the fact that the points scored were approximately 10 per cent. lower than in the previous Competition may be explained by the fact that the South Australian lambs which constituted a large proportion of the entries, were apparently not at their best.

Unfortunately, except that they were cross-bred, the breeding of Mr. Henry's ewes is not given. Mr. Henley's lambs were Southdown, Romney Marsh–Merino, Mr. Golder's were Southdown, Border Leicester–Merino. Mr. Shillabeer's Southdown English Leicester Merino, while Messrs. Hawkin's lambs in Class II. were Shropshire, Lincoln–Merino Cross.

Licensed Skin Buyers

Sheep Owners Protection Act

Following is a list of persons licensed under the Sheep Owners Protection Act to buy raw sheep skins. The licences have effect until the 31st December, 1938.

Licence No.	Name.	Address.
520	Allan, J. R. ..	19 King-street, Melbourne
530	Angliss, W. and Co. Aust. Pty. Ltd.	Lynch-street, Footscray
607	Armytage and Boyd	Lloyd-street, Kensington
675	Austin and Ford Pty. Ltd.	Hopetoun
521	Banks, C. L. ..	Barkly-street, Ararat
573	Barry, A. S. H. ..	Main-street, Minyip
699	Barrett, H. L. ..	12 Bond-street, Sale
572	Bartlett, A. E. ..	Warren-street, Echuca
600	Beck, E. H. ..	Murrayville
523	Bendigo Fertilizer and Wool Co. Pty. Ltd.	East Bendigo
672	Bennett, S. C. ..	171 Isabella-street, Geelong
544	Biggs, H. A. ..	Korumburra, Leongatha, and districts
601	Black, G. D. ..	Mildura
545	Black, S. B. P. ..	Streatham
658	Block, L. N. ..	Wodonga
574	Blundell, A. ..	236 Barkly-street, Footscray
575	Bond, W. E. R. ..	Antwerp
642	Borthwick, T. and Sons	Braybrook and Portland
546	Bourke, D. ..	89 Cox-street, Hamilton
608	Brabender, L. C. ..	10 Redan-street, St. Kilda
602	The Border Wool Co.	David-street, Albury
576	Bridges, T. ..	Ligar-street, Ballarat North
547	British and Eastern Wool Co. Pty. Ltd.	80 Errol-street, North Melbourne
689	Brooks, E. J. ..	Quambatook
609	Brott and Kupermann	577 Canning-street, North Carlton
628	Bunn, D. W. ..	Princes' Highway, Warragul
524	Burns and McCleave	206 Mair-street, Ballarat
610	Burrows, A. ..	Scoresby-street, Kerang
611	Burt, R. and Co. ..	Kirkland-street, Euroa
525	Burton, A. Pty. Ltd.	Euroa
548	Butler, E. and Sons	Tallangatta
549	Callan, P. J. and Son	6-8 Moorabool-street, Geelong
694	Cameron, J. J. ..	Manangatang
645	Canfield, E. T. ..	Victoria-street, Rochester
673	Carr, M. ..	Mitiamo
655	Cass, R.	Chetwynd
550	Clark, J.	Lonsdale-street, Hamilton
577	Clarke, W. J. ..	Ouyen
659	Clarke Bros. ..	Firebrace-street, Horsham
718	Clemens, J. ..	Omeo
578	Collins, H. G. ..	Kaniva
678	Cook, T. J. ..	Black-street, Terang
519	Cook, W. J. ..	Allansford
612	Cooke, E. J. ..	Murrayville
687	Cooper, A. S. Pty. Ltd.	87 Lambeth-street, Kensington
698	Coulstock, T. R. A.	Allan-street, Kyabram
551	Curran, J. M. ..	Annuello
629	Currie, A. C. ..	Echuca
665	Curry, T. ..	Silver Mines-road, St. Arnaud
552	Dallimore, P. J. ..	Brook-street, Camperdown
579	Dent, B. C. ..	Bombala-street, Delegate, New South Wales
553	Devine, P. ..	Numurkah
632	Dimboola Stores Ltd.	Lochiel-street, Dimboola
712	Dlug, Israel ..	477 Canning-street, North Carlton
709	Dobbie, H. W. ..	Calivil
677	Downes, A. ..	Dunkeld
580	Duggan, T. A. ..	Mollison-street, Kyneton
603	Edgecumbe, J. H.	Hannon-street, Sea Lake
631	Egan, B. F. ..	Portland
604	Elliott, A. ..	Merino
554	Ellis, C. J. ..	de Boos-street, Euroa
695	Ellis, J. M. ..	39 Roberts-street, Essendon
555	Evans, C. J. ..	83 French-street, Hamilton
681	Evans, W. J. ..	Boort
556	Ferguson, F. ..	Market-square, Bendigo
702	Ferris, R. L. ..	Langley
721	Ferris, M. M. ..	Warrnambool
581	Fletcher, O. H. ..	Moyer-street, Donald
606	Fookes, M. D. ..	166 Amess-street, North Carlton
582	Freeman, W. G. ..	Elmore
652	Freeman Bros. ..	Scott-street, Warracknabeal
557	Fryberg, M. ..	Rushworth
692	Gabriel, and Co. ..	Bordertown, South Australia ..
593	Gelbart, D. M. and Co.	20 Wilson-street, North Carlton
605	Gelbart, J. M. ..	20 Wilson-street, North Carlton
583	Gilbert, F. C. ..	Williams-street, Charlton

LICENSED SKIN BUYERS—*continued.*

Licence No.	Name.	Address.
688	Gillies, A. A. ..	Campbell-street, Traralgon
666	Glazebrook, J. C. ..	Commercial - street, Yarram
654	Godfrey, T. and Sons	Main-street, Stawell
558	Gordon, C. G. ..	83A Capel-street, West Melbourne
584	Gorton, C. H. ..	Alexandra
585	Grant, D. A. ..	Nhill
586	Greenway, K. ..	High-street, Mansfield
613	Gregory, T. K. ..	Murchison
559	Gross, C. O. Pty. Ltd.	161 High-street, Echuca
691	Gulbin, B. C. ..	Murtoa
633	Haines, G. G. ..	Wonthaggi
697	Hankin, A. ..	Berri, South Australia
526	Hargreaves Bros. Pty. Ltd. ..	Ararat
685	Harris, L. ..	Rupanyup
587	Hart, W. P. ..	977 Rathdown-street, North Carlton
641	Hase, H. E. ..	Omeo
566	Hassall, W. E. ..	Rainbow
588	Haughton, W. and Co.	545 Little Collins-street, Melbourne
651	Hill, H.	Warracknabeal
589	Hogan, A. P. ..	Corryong
670	Hould, R. J. ..	Byrne-street, Stawell
643	Howard, E. J. ..	Wood-street, Donald
674	Hunting, G. W. ..	130 Argyle-street, St. Kilda
630	Jackson, J. ..	Nolan-street, Kerang
560	Jackson, J. Pty. Ltd.	Bairnsdale
590	Jeffrey, J. ..	Echuca
527	Johnson, A. P. ..	Lake Boga
591	Johnson, M. S. ..	Ultima
684	Jones, E. V. ..	Harrow
707	Keady, J. D. ..	McBride-avenue, Wonthaggi
634	Kennon J. and Sons Pty. Ltd.	Richmond
592	Khan Rhoda ..	Talbot-road, Maryborough
528	Kilroy and Story ..	High-street, Heathcote
710	Krug, I. ..	477 Canning-street, North Carlton
529	Lindsay, D. ..	Jeparit
561	Lloyd Bros. and Maginnis Pty. Ltd.	199 Boundary-road, North Melbourne
676	Long, C. J. ..	70 Westbrook-street, East Kew
700	Lynch, M. T. ..	Kyabram
517	McGrath, B. F. ..	Wodonga West
683	McGrath, J. ..	Albury, New South Wales
708	McGuire, L. ..	Tower Hill, Rutherglen
594	McInnes, N. C. ..	Derrinallum
615	McIntosh, D. ..	Woomelang
595	McLean and Son ..	Smyth-street, Benalla
535	McLennan, D. ..	Wycheproof
719	McLennan, D. J. ..	Sea Lake
649	McNamara, F. J. ..	Numurkah
587	McPhee, C. C. ..	Beulah
565	Mann, J. and Son	Wodonga
647	Marshall, G. J. ..	Edenhope
717	Martin, H. ..	299 Ross-street, Port Melbourne
537	Moir and Cary Pty. Ltd.	Heathcote
686	Moore, D. R. ..	Kilmore
536	Niddrie, L. G. ..	27 Lonsdale-street, Hamilton
522	North-Western Wool and Skin Stores	Gummow-street, Swan Hill
538	O'Beirne, J. and F.	Linton
656	O'Beirne, J. D. ..	Hamilton-street, Horsham
661	O'Brien, L. ..	Nathalia
644	O'Brien, W. J. ..	526 Wilcox-street, Albury
567	O'Grady, F. ..	4 Collier-street, Echuca
568	O'Keeffe, P. and J.	Girdwood-avenue, Carnegie
569	Payne, A. ..	Nyah West
570	Penney, H. ..	Mair-street, Ballarat
539	Perkins, F. W. ..	Bay-road, Mt. Gambier South Australia
657	Perry, A. J. ..	25 Nelson-street, Colac
664	Petrie, J. ..	Buangor
614	Pettit, R. ..	Mahon-street, St. Arnaud
680	Phillips' Co-op. Soc. Pty. Ltd. (in liquidation)	Main-street, Minyip
693	Purss, A. ..	Hanson-street, Corryong
540	Pyramid Co-op. Soc.	Pyramid Hill
653	Quarrell, C. ..	Cobden
722	Rasmussen, J. ..	Numurkah
636	Reason, C. T. ..	Pekin-road, Maryborough
646	Rehfisch and Co. ..	223 Mair-street, Ballarat
671	Rice, F. E. ..	Murtoa
541	Rice, J. W. ..	Shepparton
616	Rich and Gross ..	Brougham-place, Geelong
518	Roberts, C. G. ..	115 Burnley-street, Burnley
679	Roberts, G. M. ..	Alberton
696	Robertson, C. N. ..	Nathalia
716	Ross, S.	380 Rathdown-street, North Carlton
617	Rowan, L. M. ..	Minyip
705	Ruedin, U. F. ..	100 Moran-street, Bendigo
542	Russell, R. ..	Colac West
660	Scadden, A. J. ..	Middle Tarwin
543	Scott, A. B. ..	Stawell
598	Scott, F. ..	Kyneton
599	Scott, J. G. ..	Thompson-street, Maffra
650	Shinberg, P. ..	109 Arnold-street, North Carlton
571	Short, I. W. ..	George-street, Hamilton
663	Simpson Bros. and Barber Pty. Ltd.	8th-street, Mildura
534	Sims Cooper Freezing Works Pty. Ltd.	Newport and North Geelong
693	Smethurst, W. J. ..	Princes' Highway, Drouin
624	Smith, A. W. ..	Mansfield
706	Soding Bros. ..	High-street, Charlton
694	Soulsby, G. ..	Inglewood
625	Sproal, H. M. ..	Macarthur
564	Sproul, J. ..	Wagra-road, Tallangatta
640	Stanton, J. ..	Nelson-street, Nhill
618	Stapleton, J. ..	7 Mile-road, Nar Nar Goon

[*Continued on page 204.*

Beech Forest Potatoes and Corky Scab

What the Department is Doing

REFERRING to a newspaper complaint that he had been unsympathetic to requests made by potato growers of Beech Forest, the Minister of Agriculture, Mr. E. J. Hogan, stated that on the contrary he had been most sympathetic and considerate to them.

Corky scab had been found on potatoes grown in Beech Forest, and it was his duty as Minister of Agriculture to prevent it spreading to other parts of the State. The assertion "that the Department had prevented growers from marketing their potatoes" was incorrect. The Department arranged for the growers whose potatoes were affected to sell their potatoes to Government institutions, where they could be safely used and the peelings incinerated.

In 1936, 372 tons of Beech Forest table potatoes in question were sold through the Department to Government institutions at £5 8s. 6d. per ton. The institutions paid the same price for these potatoes that tenderers offered to supply other potatoes for. Small potatoes from the affected areas were not allowed to be sold for seed and used in clean districts.

The assertion in the newspaper article that "no compensation was paid to growers and they were officially informed that they must not grow potatoes on their farms for five years" was also incorrect. The farmers were officially advised not to plant potatoes on the same piece of land where corky scab had been discovered, and they were advised that they could plant potatoes on other parts of their farms and to use clean approved seed.

The farmers were advised to sow down to grass land where affected potatoes were previously grown. Rye-grass and manure were provided free of cost by the Department to do so. The Department was endeavouring to clean up the disease in Beech Forest, and had necessarily to confine it to as small an area as possible and prevent it spreading to clean districts.

Potatoes from corky scab affected districts in Tasmania were not allowed into Victoria, and potatoes from Beech Forest similarly affected were not allowed to be marketed indiscriminately in this State, and every one who understood the subject approved the Department's action.

Last week, Mr. Hogan continued, potatoes from Tasmania affected with corky scab arrived in Melbourne, but they had to be destroyed or removed from the State.

The allegation that a request for a further inspection of the farms in question was refused by the Department was also incorrect; the Department had not refused to have a further inspection. The Departmental officers had made and were making continual inspections of the affected area, and if their advice was carried out faithfully by the farmers the affected area could be completely cleaned up and the disease eradicated.

All producers knew that when outbreaks of infectious animal diseases occurred effective action was taken to eradicate them. When an outbreak of pleuro-pneumonia occurred, even if only one animal was affected, the farm was quarantined, and all affected cattle were destroyed; the adjoining farms were also quarantined if the cattle thereon were "contacts"; previous sales of stock from such farms were traced, and all purchasers of stock were traced to locate the source of infection, and thorough and constant inspection and tests were carried out to identify infected animals both on the "outbreak" farm and contact properties. The quarantine was not lifted until inspection and tests had satisfied the officers that the disease had been completely eradicated.

Similar action was taken with swine plague, all affected pigs were destroyed and the buildings wherein the pigs were kept were effectively disinfected or burnt.

The Department was taking similar action to prevent the potato disease known as corky scab spreading, as it takes to prevent pleuro-pneumonia in cattle and swine plague in pigs spreading, and it was the Department's duty to do so.

Mr. Hogan added that he was loathe to believe that any one really wanted the Department to forego its duty and "give in", and allow the disease to extend to all the Victorian potato-growing districts.

Pasture Improvement

(Continued from page 170.)

Results of Major Plots

GIPPSLAND AND WESTERN DISTRICT

A summary of the general results obtained from the manurial trials is shown in Tables IV. and VIII. Details of the earlier results are given in the second, third, fourth, and fifth year's report published in the April, 1934, May, 1935, April 1936, and April, 1937, Journals of the Victorian Department of Agriculture.

Details of the yields obtained in the earlier years are to be found in the previous reports. This report is mainly confined to the 1937 results, but the tables also show the total annual yields of produce obtained from the various manurial treatments since the work was commenced. Fuller details relating to the chemical composition of the soils and to the pasture types are to be found also in the earlier reports.

Mowings during the past year were made at rather more frequent intervals than usual and, coupled with the very unfavorable season, the individual cuts have been light. Mowing was terminated on the Toora, Mirboo North, and Coragulac plots after the mid-spring of 1936.

CALDERMEADE (*J. Davis*).

(*Mean Annual Rainfall* 30·5 *inches.*)

The Caldermeade plot is situated 1 mile north of the Caldermeade railway station on a deep fertile clay loam soil with a pasture consisting of perennial rye, subterranean and white clovers, with Kentucky blue and some flat weed. The yields of greenstuff taken from this plot have been maintained at an unusually high level and so far the plot has shown little sign of exhaustion due to the repeated mowing and removal of the produce. The potash-treated plots have recently shown an appreciable increase over the super. or super. and nitrogen plots, but the increase is small compared with the results obtained in the Western District.

The super. 2 cwt. and 3 cwt. plots continue to show marked increases as compared with the unmanured strips, the yields from the 3 cwt. plots being somewhat better than those from the lighter dressing. Plots given a dressing of lime at the rate of a ton to the acre have not shown any improvement from the treatment. Sulphate of ammonia applied in addition to the super-phosphate has sometimes shown a small increase in the early spring, but over the year its effect has not been beneficial.

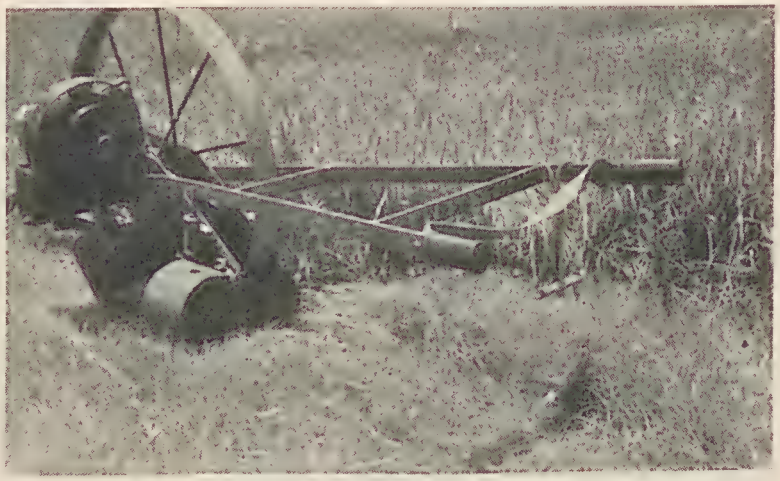
TABLE I.—MANURIAL TRIALS, CALDERMEADE.

Season.	Yields in cwt. of Greenstuff per Acre.					
	No Manure.	Super. 2 cwt.	Super. 2 cwt., S. of A. 1 cwt.	Super. 2 cwt., S. of A. 1 cwt., Lime 1 ton.	Super. 2 cwt., S. of A. 1 cwt., Potash 1 cwt.	Super. 2 cwt. Autmn. 1 cwt. Spring.
Total Annual Yields.						
1932 ..	196	297	293	287	290	310
1933 ..	124	238	233	256	249	261
1934 ..	194	360	321	341	345	395
1935 ..	285	503	494	477	526	502
1936 ..	238	465	433	445	472	475
1937 ..	203	301	304	310	326	318
Individual Cuts, 1937.						
Apr. 19 ..	11½	14½	13½	16	14	18½
May 31 ..	7	23	21½	24	28½	26½
Aug. 2 ..	4½	14	13	14	21	15
Sep. 20 ..	39½	89½	112	115	125½	95
Oct. 26 ..	103	109½	97	93	92½	105½
Nov. 15 ..	17½	24	21½	21	19½	25½
Dec. 20 ..	18	24½	23½	25	23	29½
1938.						
Jan. 31 ..	2½	2	2	2½	2	2½

The results obtained are shown in Table I.

On the pasture mixture and species trial the best growth has been made by the perennial rye, Kentucky blue, white and subterranean clovers, with phalaris, cocksfoot, timothy, and red clover also showing satisfactory development. Volunteer grasses of a weedy character were prominent on this plot, but these have been suppressed by early cutting, either for silage or early grass hay. Good swards have been developed by the New

Zealand Hawke's Bay ryegrass and also the Victorian strains obtained from old pastures. The poorer strains of rye made a good showing in the first year but have since disappeared.



The Autoscythe at work on the Korumburra plot.

KORUMBURRA (F. E. Kurrle).

(*Mean Rainfall* 46.1 *inches.*)

This plot is situated 1½ miles south of Korumburra on Jurassic grey hill soil, typical of the South Gippsland hills. The district is favoured by a liberal rainfall and the season of pasture growth is a prolonged one. Under favorable summer conditions the mowing plot, although almost dormant, remains green. With the usual autumn rains good growth can be expected before the winter, and even during the winter period fair growth may be maintained. The pasture consists of Yorkshire fog, cocksfoot, perennial rye, subterranean and white clovers with flat weed and the field daisy.

From the start of the experiment the supered plots showed a good increase over the unmanured plots and this has been sustained in the more recent years. Sulphate of ammonia, given in addition to super., has depressed the total annual yields, but the further addition of potash has been more than able to overcome this injurious effect. In the first year the 1-ton dressing of lime showed a good increase, but more recently this has been much less marked, and it appears as though the effect of this dressing given in 1932 is now largely spent. Growth on the super. 3 cwt. plots has been consistently better than that on the plots receiving 2 cwt. only.

Perennial rye, cocksfoot, white and subterranean clovers have made the best headway on the pasture mixture and species plots. The better strains of rye have again demonstrated their superiority over the short-lived types in their ability to develop permanent swards. The best swards have been developed by the Hawke's Bay, New Zealand, and the local Victorian ryes from old permanent pastures. Yorkshire fog has been rather troublesome on the weaker strips of this plot.

The results obtained from the mowing manurial trial are set out in Table II.

TABLE II.—MANURIAL TRIALS, KORUMBURRA.

Season.	Yields in cwt. of Greenstuff per Acre.					
	No Manure.	Super. 2 cwt.	Super. 2 cwt., S. of A. 1 cwt.	Super. 2 cwt., S. of A. 1 cwt., Lime 1 ton.	Super. 2 cwt., S. of A. 1 cwt., Potash 1 cwt.	Super. 2 cwt. Autmn. 1 cwt. Spring.
Total Annual Yields.						
1932 ..	158	190	197	224	207	209
1933 ..	68	135	129	165	145	155
1934 ..	149	252	211	261	241	265
1935 ..	118	202	173	207	201	211
1936 ..	148	246	228	251	254	270
1937 ..	112	224	212	228	249	247
Individual Cuts, 1937.						
Apr. 20 ..	16½	26	20	25½	26	32½
Jun. 1 ..	3	7	5½	7	8½	10½
Aug. 3 ..	2	6½	4	5	7	7
Sep. 21 ..	11	47½	52	56	64½	45½
Oct. 25 ..	37	80	77½	79½	83	84
Nov. 16 ..	18½	22½	20½	22½	22	25½
Dec. 20 ..	17½	26	23½	24½	28	31½
1938.						
Jan. 31 ..	7	8½	8	8½	9½	10½

WARRAGUL (C. Tyssen).

(*Mean Rainfall* 40·5 *inches.*)

Situated 3 miles north of Warragul on a deep porous red clay, this plot is typical of much of the Gippsland red hill country. When first established, the pasture consisted of cocksfoot and red clover, but the red clover has been largely replaced by subterranean clover on the supered plots. The yields, during the past year, have been particularly poor, partly owing to the dry

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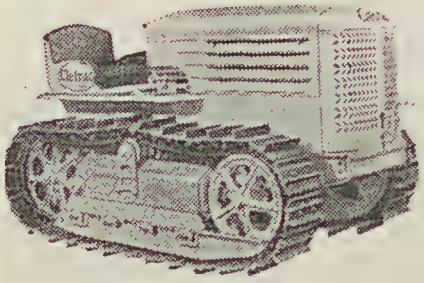

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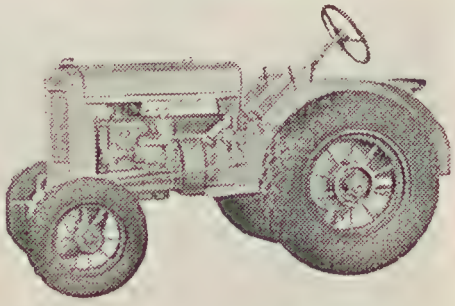

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season but largely on account of grubs having damaged the cocksfoot sward during the autumn.

Fair responses only have been obtained from super. on these plots but, except for the past year when growth was hindered by other factors, the response to super. had been improving each year.

TABLE III.—MANURIAL TRIALS, WARRAGUL.

Season.	Yields in cwt. of Greenstuff per Acre.					
	No Manure.	Super. 2 cwt.	Super. 2 cwt., S. of A. 1 cwt.	Super. 2 cwt., S. of A. 1 cwt., Lime 1 ton.	Super. 2 cwt., S. of A. 1 cwt., Potash 1 cwt.	Super. 2 cwt. Autmn. 1 cwt. Spring.
Total Annual Yields.						
1932 ..	81	89	97	126	102	96
1933 ..	49	55	71	89	77	58
1934 ..	87	111	105	126	113	125
1935 ..	59	108	76	115	90	113
1936 ..	87	151	116	134	160	159
1937 ..	40	51	47	60	67	68
Individual Cuts, 1937.						
Apr. 22 ..	5½	5½	5½	7	5½	8
Aug. 6 ..	No growth.		Plots damaged by grubs.			
Sep. 23 ..	No growth.		Plots damaged by grubs.			
Oct. 20 ..	16	24	20½	29½	33½	33
Nov. 18 ..	8½	11	10½	13	16	15
Dec. 22 ..	4	4½	4½	4½	5	5½
1938.						
Feb. 4 ..	5½	6	6	6½	7	6½

In the first years additional dressings of sulphate of ammonia and lime greatly improved the growth, but more recently these dressings have failed to maintain their beneficial results. A further dressing of lime applied to the lime-treated plots in the centre section has failed to restore the response to lime. In the first years potash did not show any response, but more recently it has been giving fair responses which have also been observed on the grazing areas. Dressings of lime in the form of burnt oxide, slaked lime, and lime sea sand have been applied to strips across the sown species trial and the grazing areas, and all forms of lime have shown a similar useful result.

The weights obtained from the mowing section are set out in Table III.

The best growth on the pasture mixture section has been made by cocksfoot, red and subterranean clovers with a small amount of phalaris and perennial rye-grass. Chewing's fescue, brown top, Kentucky blue, and Lotus hispidus are all persistent but lack vigour. The general growth on this plot has been checked by the soil fertility conditions, this land having been cropped frequently before the pasture mixture trial was sown on it. The Hawke's Bay, New Zealand, seed has persisted well, as also have the Victorian old pasture strains, but the short-lived types have long since disappeared.

TABLE IV.—RELATIVE YEARLY PRODUCTION FROM VARIOUSLY MANURED PLOTS (MOWING TRIALS) GIPPSLAND, 1932–1937.

The production of the unmanured plots is expressed as 100. The "year" extends from 1st March to 28th February, except for the year 1932, when the mowing did not commence until July.

Year.	No Manure.	Super. 2 cwt.	Super. 2 cwt., S. of A. 1 cwt.	Super. 2 cwt., S. of A. 1 cwt., Lime 1 ton.	Super. 2 cwt., S. of A. 1 cwt., Potash 1 cwt.	Super. 3 cwt.
Caldermeade.						
1932 ..	100	151	148	147	147	156
1933 ..	100	183	181	199	194	202
1934 ..	100	182	165	178	179	202
1935 ..	100	168	161	162	177	168
1936 ..	100	203	189	194	206	207
1937 ..	100	148	149	153	161	158
Toora.						
1932 ..	100	118	122	125	128	127
1933 ..	100	135	133	139	147	141
1934 ..	100	145	137	145	147	154
1935 ..	100	137	133	132	144	141
Korumburra.						
1932 ..	100	118	125	143	131	132
1933 ..	100	184	178	228	199	210
1934 ..	100	163	134	165	153	171
1935 ..	100	170	148	177	172	179
1936 ..	100	173	160	178	177	187
1937 ..	100	196	183	198	217	216
Mirboo North.						
1932 ..	100	119	135	148	140	125
1933 ..	100	121	136	172	144	130
1934 ..	100	107	118	157	132	116
1935 ..	100	105	113	170	127	115
Warragul.						
1932 ..	100	111	122	156	128	119
1933 ..	100	112	162	194	183	118
1934 ..	100	123	122	145	131	137
1935 ..	100	153	120	186	144	163
1936 ..	100	179	136	157	189	188
1937 ..	100	124	114	143	158	162

WESTERN DISTRICT.

LARPENT (J. J. Rogers).

(*Mean Rainfall 27·4 inches.*)

The plot at Larpent is situated on the Prince's Highway, three miles west of Colac. The soil is a deep strong sandy loam, and the pasture, consisting of perennial rye, subterranean clover with some flat weed, was not strong, having received little or no top-dressing. A good response to super. was obtained in the first years, and there was a material response to potash from the outset. The response to super. has been rapidly declining, while growth on the super. and potash plots has been maintained at a high level.

Growth on the "super. only" plots has become very weedy and there is very little clover present, and, for this reason, they compare somewhat unfavorably with the plots treated with super. and nitrogen. On the unmanured strips the growth is largely subterranean clover, together with Danthonia and rye-grass, while the "super. only" plot has a sward consisting of weak perennial rye with Yorkshire fog, flat weed, and sorrel. The whole of the centre bay was given a basal dressing of 1 cwt. of potash early in 1936 and 1937, and the sward and growth on this section, during the past season, were greatly superior to those of the end bays.

TABLE V.—MANURIAL TRIALS, LARPENT.

Season.	Yields in cwt. of Greenstuff per Acre.					
	No Manure.	Super. 2 cwt.	Super. 2 cwt., S. of A. 1 cwt.	Super. 2 cwt., S. of A. 1 cwt., Lime 1 ton.	Super. 2 cwt., S. of A. 1 cwt., Potash 1 cwt.	Super. 2 cwt. Autmn. 1 cwt. Spring.
Total Annual Yields.						
1932 ..	98	160	168	176	194	174
1933 ..	88	143	162	171	189	146
1934 ..	124	185	173	175	232	191
1935 ..	115	111	119	135	237	113
1936 ..	104	124	126	133	233	127
1937 ..	64	60	78	79	116	57
Individual Cuts, 1937 (*Figures from end bays only*).						
Mar. 2 ..	10	11½	12	11½	13½	12
May 3 ..	2	2½	2	2½	3	2
Jul. 26 ..	2½	3	3	3	6	3
Sep. 13 ..	6½	5½	14	15	28½	5
Oct. 14 ..	17½	13½	22	22	35	13
Nov. 11 ..	21½	20	22½	22	26½	18½
1938.						
Jan. 10 ..	3½	3½	2½	2½	3½	3½

Growth on all plots was poor last year owing to the dry weather. The plots receiving super., nitrogen, and potash showed a marked increased

An improved pasture in the Moriac district. Compare the deteriorated "improved" pasture illustrated on the next page.

A deteriorated "improved" pasture brought about largely by faulty management.

growth, and although super. and nitrogen was better than super. alone, the super. 2 cwt. and 3 cwt. plots were not as good as the unmanured ones. This result has been caused by the continued removal of produce, resulting in a depleted soil fertility which can not be restored by further dressings of super. alone, but only when potash is applied in addition.

Table V. shows the results of the mowing tests.

Perennial rye-grass, cocksfoot, and phalaris have made good growth on the sown species section, but although on some plots timothy has developed a sward, it is not very productive. Hindered by the management given, subterranean clover has not made good headway. It is desirable that pastures on this land should be kept well grazed or the vigorous rye-grass will suppress the clover. White, red, alsike, and strawberry clovers have not made any headway on this area, but strawberry clover is to be found growing naturally in adjacent drains and on low-lying heavy black ground near by.

The rye-grass strain plots show the usual differences, the Victorian old pasture and the New Zealand Hawke's Bay strains having made good swards, while the poorer types have largely died out. Italian and Wimmera ryes made good growth in the first and second years but they have since thinned out and have been replaced by volunteer species.

GLENORMISTON NORTH
(K. Atkins & A. S. Noel).

(Mean Rainfall 28·9 inches.)

At Glenormiston North the plot is situated on a deep clay loam, mainly of volcanic origin, about three miles north-east of Mount Noorat and eight miles from Terang. The pasture consists mainly of perennial rye and subterranean clover with some Yorkshire fog. Previous to the establishment of the experimental plot, the pasture had been top-dressed for some years, and was in a vigorous condition when the work was commenced. A small, though consistent, response to superphosphate has been shown, but the super. 3 cwt. plots have not shown any better growth than those receiving super. 2 cwt. Fair responses to potash have been recorded in the past two years.

The vigour of growth on this plot usually has been higher than on the other Western District plots and it does not appear to have been greatly affected by the continuous cutting. The super. plus nitrogen plots have usually not been so good as the "super. only" plots, as the rye-grass and subterranean clover compete actively for dominance on this pasture, and the dressing of sulphate of ammonia encouraged the rye-grass to the detriment of the pasture as a whole. The dressing of lime seemed to give a small increase in the first two years, but has not shown any benefit since then.

TABLE VI.—MANURIAL TRIALS, GLENORMISTON NORTH.

Season.	Yields in cwt. of Greenstuff per Acre.					
	No Manure.	Super. 2 cwt.	Super. 2 cwt., S. of A. 1 cwt.	Super. 2 cwt., S. of A. 1 cwt., Lime 1 ton.	Super. 2 cwt., S. of A. 1 cwt., Potash 1 cwt.	Super. 2 cwt. Autmn. 1 cwt. Spring.
Total Annual Yields.						
1932 ..	155	174	176	187	176	177
1933 ..	115	134	137	145	143	134
1934 ..	257	336	267	279	278	339
1935 ..	243	284	242	250	303	281
1936 ..	166	222	217	214	274	224
1937 ..	120	153	153	154	198	160
Individual Cuts, 1937.						
Mar. 4 ..	17	20	18	21	18½	21½
May 6 ..	4	4	3½	4½	4	4½
Jul. 28 ..	4	7	6	6½	9½	8½
Sep. 16 ..	30	44½	50½	50½	78	48
Oct. 12 ..	38	43	45	42	50½	41½
Nov. 9 ..	25	32	27½	27	35½	33
1938.						
Jan. 11 ..	2½	2½	2	2	2	3

This plot has not shown a marked response to super., probably because the soil is a heavy clay loam and it had been manured for some years prior to the establishment of the trials. The soil evidently has a big reserve of plant food and for this reason the unmanured areas still maintain good yields.

The results obtained from the mowing trial are set out in Table VI.

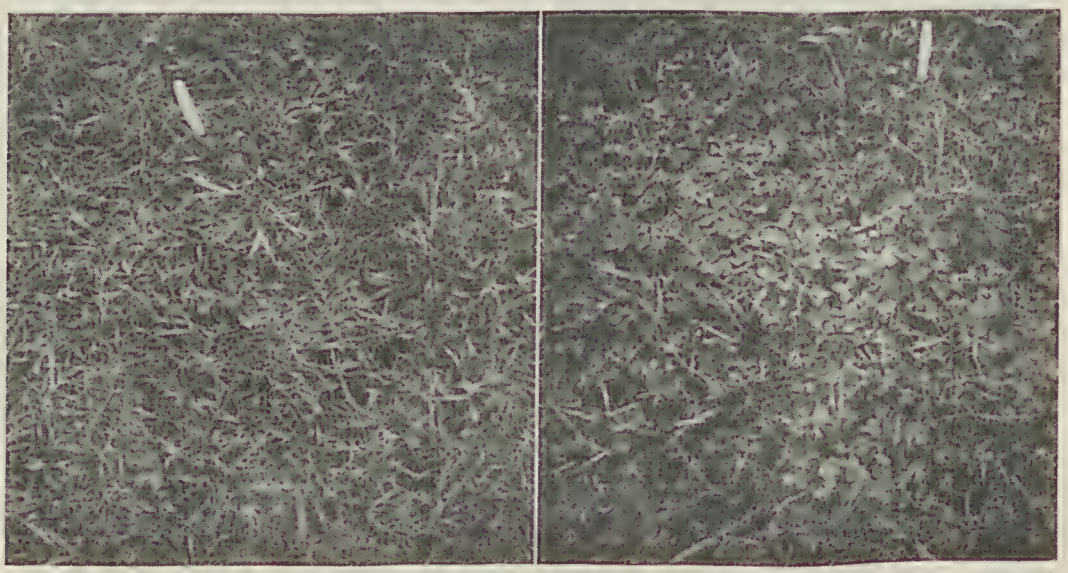
The pasture mixtures and species trial has shown the characteristic differences between the persistent and short-lived strains, the latter now having disappeared. The best mixture sward consists of perennial rye, cocksfoot, and subterranean clover. Red and white clovers made a fair showing on this plot in the early years, but have since declined. Phalaris has established satisfactorily and Kentucky blue, Chewing's fescue, and brown top are persistent, though not very productive.

CUDGEE (E. R. Murfitt).

(*Mean Rainfall* 27·5 *inches.*)

The Cudgee plot is situated on the Prince's Highway between Cudgee and Allansford, nine miles east of Warrnambool. The pasture consists of perennial rye, cocksfoot, and subterranean clover, with some bent-grass and annual trefoils. The soil is a fine sandy loam of good depth, which had been top-dressed for several years before the experimental plot was established.

Yields during the past year were light, owing to the dry season, and growth ceased early in the spring. The response to super. was very poor even during the early spring, and the heavily supered plots have been no better than the super. 2 cwt. plots. The response to potash was again marked. Nitrogen showed some response during the past spring as the super. and



Showing the contrast between swards on (left) super. + lime; and (right) super. + lime + potash plots—Cobrico.

super. plus nitrogen swards were almost entirely grassy, and there was little clover present for the sulphate of ammonia to damage.

The figures showing the yearly produce from the Cudgee plots indicate that in the first three years there was a good response to superphosphate as compared with the untreated strips, but this increase has declined and the good response to manurial treatment has been maintained only where potash has been given in addition to the super. Lime has not shown any ability to maintain the response of the supered plots, but it has slightly improved the yield of those receiving nitrogen.

The weights obtained from the mowing manurial trial are shown in Table VII.

TABLE VII.—MANURIAL TRIALS, CUDGEE.

Season.	Yields in cwt. of Greenstuff per Acre.					
	No Manure.	Super. 2 cwt.	Super. 2 cwt., S. of A. 1 cwt.	Super. 2 cwt., S. of A. 1 cwt., Lime 1 ton.	Super. 2 cwt., S. of A. 1 cwt., Potash 1 cwt.	Super. 2 cwt. Autmn. 1 cwt. Spring.
Total Annual Yields.						
1932 ..	77	130	137	118	132	136
1933 ..	88	138	146	146	170	143
1934 ..	115	225	159	158	183	222
1935 ..	119	136	134	139	211	147
1936 ..	81	106	115	119	194	111
1937 ..	50	57	68	71	114	57
Individual Cuts, 1937.						
Mar. 3 ..	4½	5½	5½	5½	5	6
May 6 ..	1	1½	1	1½	1½	1½
Jul. 28 ..	3½	4½	3½	4	7½	5
Sep. 15 ..	10½	12½	20	22	48	13
Oct. 12 ..	17½	17½	22	24	37	18
Nov. 9 ..	12	14	14	13	14½	13½
1938.						
Jan. 12 ..	1	1½	1	1	1	1

Rye-grass and subterranean clover have made the best development on the pasture mixture section, but cocksfoot and phalaris also have grown well. White clover made a good showing in the first year but it has now largely disappeared, as also have the red, alsike, and strawberry clovers, *Lotus sp.*, and lucerne. Paspalum has made good growth, particularly on patches of poor soil, and brown top is also making headway. Kentucky blue and timothy are present in small amounts and are increasing. Kikuyu grass is making good growth where favoured by damper conditions in a depression. Prairie-grass though good in the first years has now disappeared. The best swards are shown by the mixed pasture plots. Simple mixtures of perennial rye, cocksfoot, and subterranean clover having given the best growth.

The perennial rye-grass strain plots have shown marked differences. The Wimmera rye, Irish rye, and South Island New Zealand ryes have long since thinned out and these strips have been invaded by volunteer species. Good swards have been developed by the New Zealand Hawke's Bay and the Victorian strains harvested from old permanent pastures.

TABLE VIII.—RELATIVE YEARLY PRODUCTION FROM VARIOUSLY MANURED PLOTS (MOWING TRIALS)—WESTERN DISTRICT, 1932–1937.

The production of the unmanured plots is expressed as 100. The "year" extends from 1st March to 28th February, except for the year 1932, when the mowing did not commence until July.

Year.	No Manure.	Super. 2 cwt.	Super. 2 cwt., S. of A. 1 cwt.	Super. 2 cwt., S. of A. 1 cwt., Lime 1 ton.	Super. 2 cwt., S. of A. 1 cwt., Potash 1 cwt.	Super. 3 cwt.
Larpent.						
1932 ..	100	162	170	178	195	176
1933 ..	100	137	142	144	150	140
1934 ..	100	151	139	139	180	133
1935 ..	100	105	113	128	215	110
1936 ..	100	120	122	129	226	123
1937 ..	100	97	119	119	173	94
Coragulac.						
1932 ..	100	114	120	126	129	121
1933 ..	100	119	125	123	124	127
1934 ..	100	117	109	105	99	114
1935 ..	100	128	133	125	127	124
Glenormiston North.						
1932 ..	100	114	116	121	115	113
1933 ..	100	109	107	112	117	110
1934 ..	100	132	106	110	109	132
1935 ..	100	118	103	106	126	118
1936 ..	100	133	131	129	165	135
1937 ..	100	126	123	126	154	132
Cudgee.						
1932 ..	100	163	170	147	164	168
1933 ..	100	153	164	164	187	159
1934 ..	100	178	135	132	150	176
1935 ..	100	116	114	117	176	125
1936 ..	100	131	142	147	239	136
1937 ..	100	114	130	134	204	112
Cobrico.						
1932 ..	100	122	115	119	144	118
1933 ..	100	129	160	162	202	135
1934 ..	100	132	121	128	166	138
1935 ..	100	126	124	137	253	128
1936 ..	100	118	122	129	264	121
1937 ..	100	124	125	138	194	134

COBRICO (*N. Maskell*)

(Mean Rainfall 27·5 inches.)

This plot on the Cobden–Terang road is situated eight miles west of Cobden. The soil of the district is poor, being a light buckshot silt, and in an unimproved condition, carrying a weak pasture of native grasses with a good deal of bracken. The district is favoured by a good rainfall and, as a result of repeated top-dressing with superphosphate, greatly improved pastures have been established.

The pasture on the plot site had been regularly top-dressed prior to the commencement of the experiment and had reached a stage when it was no longer giving a marked response to the super. It consisted of perennial rye, white and subterranean clovers, together with sweet vernal, Yorkshire fog, and flat weed, and was dense but not vigorous. The plots have shown a small, though consistent response to super., while the response to potash has been striking. Growth was checked by dry weather conditions during the past season and it is probable that the stronger-growing potash-treated plots suffered more on this account than did the weaker-growing ones. Lime has shown to advantage during the past three years, and the grazing area treated with lime plus super. plus nitrogen has shown considerably better growth than plots receiving super. or super. plus nitrogen only.

The weights of produce obtained are shown in Table IX.

The potash-treated strips across the grazing areas have responded well during the past year, but the most striking response to potash was seen on the mowing area where the entire centre bay was given a dressing of potash 1 cwt. per acre in 1936 and 1937, while the end bays received the usual manurial treatments only. The clovers and growth on the centre bay were stimulated, very markedly, as a result of this treatment.

The sown pasture mixture and species area has made good growth, and mixed swards of perennial rye, cocksfoot, subterranean and white clovers have grown very strongly. Phalaris and red clover have made good growth and timothy and brown top have persisted well. The rye-grass strain section shows the usual differences between the weak and the better strains, the weaker strains having been replaced by volunteer species.

TABLE IX.—MANURIAL TRIALS, COBRICO.

Season.	Yields in cwt. of Greenstuff per Acre.					
	No Manure.	Super. 2 cwt.	Super. 2 cwt., S. of A. 1 cwt.	Super. 2 cwt., S. of A. 1 cwt., Lime 1 ton.	Super. 2 cwt., S. of A. 1 cwt., Potash 1 cwt.	Super. 2 cwt. Autmn. 1 cwt. Spring.
Total Annual Yields.						
1932 ..	133	164	155	157	193	145
1933 ..	81	108	136	133	174	110
1934 ..	121	167	155	163	218	176
1935 ..	87	107	108	120	232	111
1936 ..	85	101	104	110	226	103
1937 ..	85	105	108	119	175	113
Individual Cuts, 1937 (Figures from end bays only).						
Mar. 3 ..	28	31½	28	34½	29	35
May 5 ..	5½	7	5½	7½	8	8½
Jul. 27 ..	2	3½	3	3	8	4
Sep. 15 ..	5½	10	13½	13½	47	11
Oct. 13 ..	13½	18	21	22½	43	17½
Nov. 10 ..	26	31	33	33	38	31
1938.						
Jan. 12 ..	4	5	5	4½	3	5½

Licensed Skin Buyers *(Continued from page 195).*

Licence No.	Name.	Address.
638	Stephens, J. ..	Manners Sutton-street, Colac
639	Stuart, R. A. and Co.	357 King-street, Melbourne
533	Sturgeon, E. T. ..	Bowenvale-road, Maryborough
701	Sulman, R. E. ..	Numurkah
669	Taylor, H. G. ..	Birchip
648	Teasdale, R. L. ..	High-street, Charlton
596	Thomas, F. ..	Tintaldra
626	Ticehurst, T. ..	O'Connor-street, Ultima
619	Tydeman, G. D. ..	Darlot-street, Horsham
620	Vines, A. A. ..	Robinvale
668	Voges, A. V. ..	Ballarat-road, Hamilton
662	Walker, A. ..	Mooroopna
667	Warnock, R. ..	Yea
720	Warden, E. W. ..	Beechworth
621	Waring, J. G. ..	Hamilton
622	Waters, F. H. ..	Wodonga
563	Waters, S. H. Pty. Ltd.	514 Little Collins-street, Melbourne
682	Waters and Harris	Victoria-street, Warragul
623	Welsh, J. E. ..	41 Mair-street, Ballarat
690	Westphalen, W. R.	Yaapeet
637	Willoughby, L. A...	St. Arnaud
532	Wingfield, Ethel H.	High-street, Charlton
627	Wood, H. L. ..	Balmoral
635	Wright, N. A. ..	Shepparton
562	Young, H.	Orford
715	Zander, J. B. Pty. Ltd.	297–305 King-street, Melbourne
531	Zed, A. and Sons ..	Mt. Gambier, Sth. Aust.

By J. L. Provan, B.Agr.Sc., Senior Horticultural Instructor.

The Orchard.

Growers who were unable to sow cover-crops during March should endeavour to do so as early as possible. Much of the success in the establishment of a good cover-crop depends on satisfactory germination and good autumn growth, therefore early sowing is a decided advantage. If 1 cwt. or 2 cwt. per acre of sulphate of ammonia is added to the usual dressing of superphosphate and applied with the seed, it will assist in promoting early growth. Even where legumes are sown, this nitrogenous fertilizer will be found beneficial.

This season, codling moth has been particularly prevalent, and some growers have experienced heavy losses. It is very important that these growers should follow the orchard hygiene practices adopted by successful growers. A recent examination of windfalls revealed that approximately 50 per cent. contained live codling moth larvae. These continue to develop and then over-winter, in shelter, as fully-grown larvae, pupate, and emerge as moths next spring. It is not advisable to rely on spray applications alone to reduce a large moth population. From time to time suggestions have been made that heavy oils alone, or sometimes, with other ingredients incorporated in them, should be applied to the trunk and main branches of apple and pear trees to destroy the over-wintering larvae. Such practices, however, have so far been unsuccessful, and thorough scraping of the trunk, &c., to remove all loose bark is preferred. Wounds and crevices should also receive attention. Late varieties of apples, not yet harvested, can be protected from codling moth attack, if necessary, by applications of white oil emulsion sprays at a strength of 1 in 60. As a general rule, however, very little moth activity occurs during April, although in some orchards the last heat-wave, late in March, resulted in moth flight.

Early varieties of navel oranges will be harvested late in April from groves in favoured situations. Growers are reminded that the regulations concerning the maturity standards of oranges will be enforced, as usual, this season. For navel oranges, the Regulations, under the *Fruit and Vegetables Act* 1928, provide that not more than 26 c.cms. of N/10 soda will be required to neutralize the acidity contained in 10 c.cms. of expressed mixed juice from not less than five oranges. To avoid rejections at the market, growers should have their fruit tested at intervals

during the early harvesting period to ensure that only matured fruit is placed on the market. Growers should bear in mind that the consumer desires sweet, juicy fruit, and he is willing to pay for quality.

In groves where black or soft brown scales have been prevalent, an application of white oil emulsion spray 1 in 40 will effectively control these pests. Applications at this time will be most effective if they are made before the female scale becomes an egg sack. Spray applied after this transformation will not penetrate the thick scaly covering and destroy the eggs.

Before autumn rains occur citrus growers should inspect the trunks of all trees showing signs of decreasing vigour. Collar rot is a possible cause of this, and if all the diseased areas are carefully removed, and the wounds painted with a Bordeaux mixture made of equal parts of bluestone and lime, and sufficient water to form a paste, the tree will recover before winter.

Scald of Jonathan apples in cool stores causes a more or less constant loss to growers each year. Some interesting facts on this subject have been ascertained by recent cool storage experiments. These investigations have definitely shown that scald is a low temperature disorder, which occurs during the first two or three months of storage, and its incidence is accentuated by certain pre-storage factors. These factors include maturity at harvest—early picked fruit being less susceptible to scald than later picked apples—although fruit picked very late, when flavour is declining and the flesh is commencing to soften, is not very susceptible to scald, but is liable to become mealy in store. A high pre-storage temperature of the fruit—say 65° F. and over—greatly increases scald liability. Fruit should be allowed to cool over-night and be placed in store the following morning. It is recommended that Jonathan apples be stored at 36° F. until the end of April, then at 34° F. until the end of May, and thereafter at 32° F.

These investigations showed further that the factors causing scald also bring about breakdown. The above recommendations, therefore, will assist in reducing the incidence of this prevalent storage disorder. Jonathan apples should not be placed in chambers in which pears are being pre-cooled for export. Instructional Circular No. 13, dealing with scald in the Jonathan apple, is available free on application to the Director, Department of Agriculture, Melbourne, C.2.

The Flower Garden

By A. W. Jessep, M.Agr.Sc., B.Sc., Dip.Ed., Principal, School of Horticulture, Burnley.

AS was suggested in the garden notes in the January number of this *Journal*, April is the time for planting seedlings of calendulas, winter-flowering stocks, carnations, and for transplanting violets. This is also the bulb-planting season.

So many gardens are now concentrating on the annuals that bulbous plants are liable to be neglected, but daffodils, tulips, hyacinths, ixias, and lilies are very worthy of a place in any garden, and the sooner they are put in now, the better.

April and May are the best months in which to plant tubers of ranunculus and anemone. They are not very particular as to the type of soil and will grow well in either a light or a heavy one, as long as the area is well drained. When preparing the ground it is advisable to dig it over and lime it about two or three weeks before putting in the corms. Also, when planting, or shortly afterwards, lightly work some bone dust or some market-garden manure into the soil at the rate of 2 or 3 oz. per square yard. If farmyard manure is available and is dug under a spade's depth about three weeks before planting, no additional fertilizer should be given, as sappy or soft growth must be avoided.

Planting.—The tubers of the ranunculi should be planted with the claw downwards and firmly pressed into the ground so that the crown is at least two inches below the surface. Plant them about six inches apart in the rows and allow one foot between the rows.

The anemone, or windflowers of scarlet as they are sometimes called, delight in an open position with the wind blowing softly through them.

Plant them six inches apart either in rows or clumps about one and a half or two inches below the surface. Be careful to place the crown upwards. (The crown has a slight tuft on it.) Put ranunculi and anemone plants in a damp sack about 24 hours before sowing so as to start them into growth. Both like moisture, particularly during the flowering period. The flowers, with their wide colour range from white to pinks, blues and reds, are a striking feature in any garden.

Varieties—Ranunculus.—There are a number of varieties, but they are usually sold as hybrids

of a particular colour, e.g., tango shades, bright reds, yellows, and so on.

Anemones are mainly the St. Brigid type and are sold as colour strains, such as Blue Bonnet, Huntsman, or mixed.

Lawns.

Lawns are usually sown in the spring or autumn. If the ground is in good condition April is a good month in which to sow the finer English lawn grasses. Buffalo and Couch require the warmer weather and should be sown in the late spring, about November.

[Courtesy "Claremont" Nurseries.

Ranunculi.

As the lawn is expected to last for many years it is essential to prepare the ground thoroughly. Dig it over and, if necessary, give it a good dressing of lime and water to encourage the weeds to germinate. Two or three weeks after digging, fork it down and carefully level it.

It is better to postpone the sowing until spring than to sow an area that has not been thoroughly prepared.

The seed to be sown varies with the environmental conditions. One part New Zealand Brown Top with two parts of Chewing's Fescue, sown at the rate of 1 oz. per square yard, will give a fine lawn, but one that requires careful attention. For lawns not likely to be given that attention, and those required for harder use, the following mixture may be found more suitable:—1 part New Zealand Brown Top, 2 parts Chewing's Fescue, 2 parts Kentucky Blue, and 4 parts certified perennial rye grass. Sow at the rate of 1½ oz. per square yard.

In hotter parts of the State, Couch and Buffalo are probably the most satisfactory. After sowing, rake over lightly, and if the weather is dry, water carefully with a very fine spray. The seed should germinate in from ten to fourteen days and the young grass should be carefully cut when about three inches above the ground.

The Vegetable Garden.

This year the dry conditions in the vegetable garden have been very trying, particularly in the country, where water is scarce. Winds have ripened off the autumn crops earlier than usual, and the very dry weather of February did not encourage late plantings. Constant watering was necessary to keep the crops growing. Old plants, and those not likely to attain success even if rain does arrive, should be removed, the ground dug over and if necessary limed, in readiness for future plantings.

The dry spell has been a severe test on the cabbage family. Where the cabbage-moth caterpillar has attacked the leaves, the young plants should be sprayed with arsenate of lead at the strength of 1 lb. of paste to twenty gallons of water. The older plants should be dusted with the non-poisonous derris dust. Because of its poisonous properties it is not wise to use arsenate of lead after the leaves have commenced to curl inwards. If aphis are present on the broad beans give a spraying with nicotine sulphate and soft soap.

Make further sowings of broad beans, peas, carrots, parsnips, and beetroot and plant out more seedlings of cabbage, cauliflowers, lettuce, and celery. Cut the tops off the asparagus plants at about 1 inch above the ground level,

give the bed a good weeding, lightly fork it over, and apply a heavy dressing of well-rotted stable manure.

Making an Asparagus Bed.

If a new asparagus bed is to be made, this is the time to commence. A good warm open position should be selected so as to give early spring growth. The most suitable soil is a deep friable loam. It is advisable to work it to a depth of about 2 feet, but care must be taken not to bring the subsoil to the surface. Give the area a good dressing of lime and leave it for a month. In May, work in a liberal amount of farmyard manure and in June, finally prepare it for planting by working it up. When completed the bed should be about 6 inches higher than the paths.

To supply an average family about 30 plants would be necessary and these would cover some 12 square yards. Asparagus is a delicate, wholesome, and appetising vegetable, but it must be remembered that only a poor weight yield is obtained from it compared with that of most other vegetables.

If the bed is thoroughly prepared and carefully attended, it should remain prolific for an indefinite period. The stalks must not be cut at all during the first year, and very sparingly in the second. After about November, allow the fronds to develop and cut them back about April.

Full particulars of the cultivation of asparagus are included in a leaflet issued free by the Department of Agriculture.

Viticultural Notes

By D. G. Quinn, Viticulturist.

Cover Crops.—During the past month the grape harvest has fully occupied the attention of every vigneron. The sultana crop has been exceptionally heavy and clean, and the ideal weather experienced to date for drying, should result in this work being completed earlier than usual. Irrigation and the sowing of cover crops should be proceeded with as soon as possible after completion of the harvesting operations, with the object of getting the plants well-established before the cold months of winter check growth.

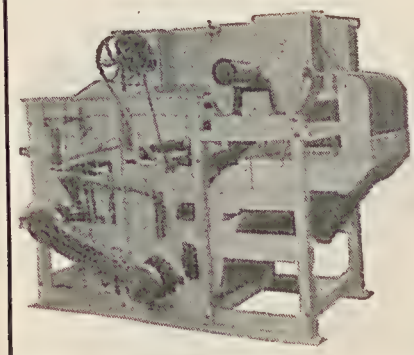
Feeding-off.—The practice of feeding-off vine foliage immediately after vintage, is not a desirable one. During April and early May the leaves change colour. This progressive change indicates that the leaves have ceased functioning, and the plant food they previously contained is moving back into the buds and canes where it constitutes the initial food supply for the production of growth in the coming season. By the time the leaves have assumed their autumn tint they contain very little actual food value for animals.

There is one other closely related point which is worth observing at this period of the year. If any vine, or block of vines, changes colour earlier than surrounding vines, it is an indication of weakness, often the after effect of over-production. This form of exhaustion possibly has some connexion with the strange, but fairly frequent, deaths of odd vines in the following spring.

Manurial Value of Wine Marc.

About this time of the year, several thousand tons of wine marc, or pressings, have to be disposed of in Victoria. In 1935–37, the Viticultural Station of the University of California investigated this subject and reached the following conclusions:—1. Grape pomace as a vineyard fertilizer compared favorably in chemical composition with ordinary farmyard manure, but as most of the nitrogen is contained in the seeds, it is slower in action. 2. Placing a value on its content of nitrogen only, they valued it at 7s. per ton fresh. 3. The addition of lime does not enhance its value on soils not deficient in lime. 4. No harm is likely to result from moderate applications to the vineyard of freshly pressed pomace.

Three samples of typical marc were analysed and valued last year by the South Australian Department of Agriculture, and allowing a unit value of 12s. for nitrogen, 2s. 6d. for phosphoric acid, and 5s. for potash, the samples were respectively worth £1 11s. 11d., £1 7s. 7d., and £1 5s. 5d. per ton, the last having passed through the Tarac process for the extraction of tartrates and alcohol. The above figures make no allowance for the organic matter which possibly is the most valuable constituent of the manure, when used for viticultural purposes.



SEED CLEANING MACHINERY

GRAIN CLEANING MACHINERY
OAT CLIPPING AND GRADING PLANTS
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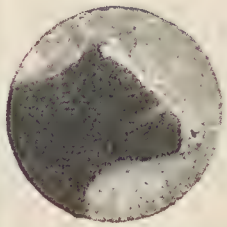

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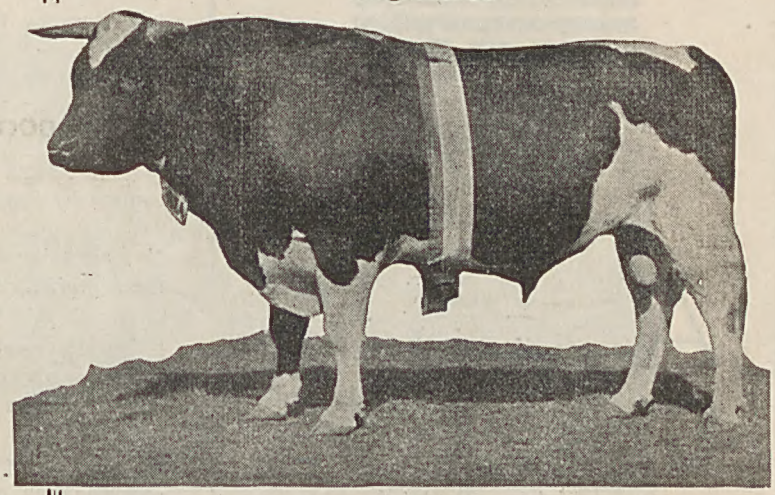

Victoria Joyous Mercedes

Dam:

Victoria Joybell, produced 15,387 lb. milk, 3·67 % test, 565 lb. butter-fat in 273 days, twice-a-day milking.

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His eight (8) first-calf daughters have averaged 9,930 lb. milk, 3·73 % test, 370 lb. butter-fat in 273 days on first lactations.

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Sire: Victoria Joyous Mercedes (985) *Dam:* Victoria Streaky Patch (3769)
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2. **VICTORIA DANCING BOY** (C.R.) *Born 19th July, 1937*
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Victoria Dancing Girl produced 319 lb. butter-fat in 273 days as Jr. 2. 4·03% test,
Price: **11 guineas** f.o.r. Werribee

3. **VICTORIA ILKA JO** (C.R.) *Born 23rd September, 1937*
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Victoria Ilkabelle produced 384 lb. butter-fat in 273 days as Sr. 2.
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4. **VICTORIA BARITONE** (C.R.) *Born 2nd December, 1937*
Sire: Rupertswood Inka Jo (1732) *Dam:* Victoria Joyous Song (Vol. 14)
Victoria Joyous Song is on her first lactation. Her dam produced 527 lb. butter-fat in 273 days.
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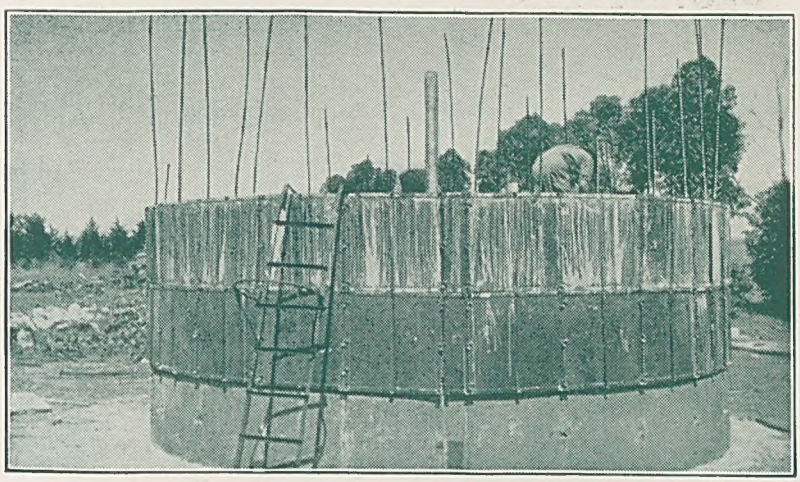

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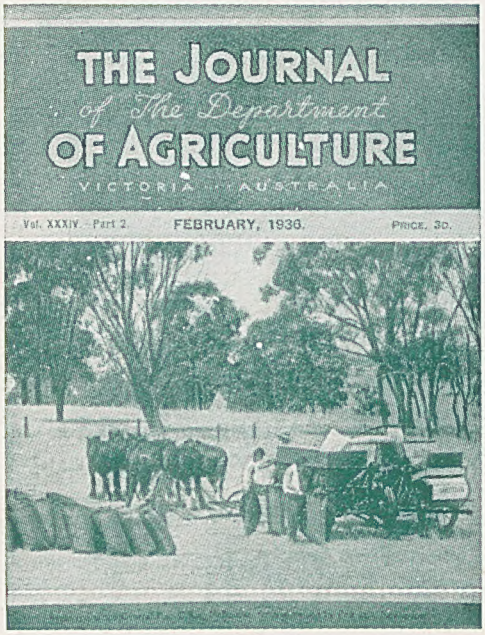

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